Journal of THE AMERICAN DIETETIC ASSOCIATION

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VOLUME 30
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CONTENTS, OCTOBER 1954

RADIATION IN FOOD PROCESSING—*B. S. Schweigert*, Ph.D. 973
ODD DIETARY PRACTICES OF WOMEN—*Cecile Hoover Edwards, Hattie McSwain, and Susie Haire* 976
NUTRITIVE VALUE OF PARBOILED WHEAT USED IN THE NEAR EAST—*Elia Shammas and William H. Adolph*, Ph.D. 982
THE PHILOSOPHY OF FOOD FORTIFICATION—*E. M. Nelson* 984
BASAL METABOLISM OF GIRLS IN THE GREAT LAKES REGION. Need for Continuous Promotion of Iodized Salt—*Fanny Kenyon*, M.D., *Harriet J. Kelly*, Ph.D., *and Icie G. Macy, Ph.D., Sc.D.* 987
ASSESSMENT OF DIETARY STUDY METHODS. I. Comparison of Methods for Obtaining Data for Clinical Work—*Martha F. Trulson*, D.Sc. 991
INGREDIENTS FOR GOOD PERSONNEL RELATIONS—*Frank K. Leppert* 996

EDITORIAL
What Is Your Incentive for Effective Administration?—*Margaret E. Terrell* 1000
The Preservation of Idiosyncrasy—*Arthur H. Brayfield* 1001

CURRENT COMMENT
Developing New Diet Manuals—*Lorraine Weng* 1003
A Guide for the Preparation of Diet Manuals—*Doris Johnson*, Ph.D. 1010
BOOK REVIEWS 1016
LETTERS TO THE EDITOR 1020
CURRENT LITERATURE 1024
NEWS NOTES 1052

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Radiation in Food Processing[1]

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Division of Biochemistry and Nutrition, American Meat Institute Foundation, and *Department of Biochemistry, University of Chicago*

IN discussing sterilization of foods by radiation, it perhaps is pertinent first to point out why there is a great deal of interest in the development of new methods of food processing. The objective of any method of processing or preserving foods is to maintain or improve the quality of the unprocessed food product. There have been many improvements in existing methods of heat processing our foods and in commercial freezing of foods. However, there is a real need for alternate methods of processing which would permit distribution and storage of the foods without the use of refrigeration and/or prevent reductions in the quality of foods associated with existing heat processing methods.

Such new methods would obviously have great importance not only in the civilian market but also for the Armed Forces. These advantages are particularly striking when one considers the tremendous value of being able to supply sterile, stable, fresh products to front-line troops, hospital patients, and so on, that could be cooked immediately before serving. Great interest has developed in the past few years in the potential commercial use of radiation sterilization, also called "cold sterilization," which is achieved with only a small rise in temperature of the product.

I would like to point out immediately, however, that there are many problems that must be solved prior to the commercial adoption of any new method of processing. This is certainly true of processing foods by radiation. These problems include overcoming the serious objections to taste, smell, and appearance of the radiated product, evaluations of the costs and safety hazards of the process, ascertaining the effect on the nutritive quality, and investigation of the possible production of any harmful substance either during radiation or subsequent storage of the radiated products.

In this discussion an attempt will be made to review some of the problems as well as some of the potential advantages, and to indicate the current status of the commercial feasibility of such a process. Some of these aspects have been summarized in a recent circular published by the American Meat Institute Foundation (1).

RADIATION DOSAGES

It perhaps would be desirable first to indicate level and kinds of radiation treatments that may be used. The so-called "cold sterilization" involves irradiating the food primarily by either beta rays (high-speed electrons) or by gamma rays (similar to X-rays) at dosages that assure sterilization of the food—2 to 3 million rep (rep = unit of quantity of radiation absorbed by the material irradiated).

It is of interest to compare radiation dosages and their effects in biologic systems. Such a comparison (Table 1) clearly illustrates the high radiation dosages required for sterilization of foods and the associated safeguards that must be taken to protect personnel from exposure to these rays. From available information, there appears to be a high correlation between biologic complexity and sensitivity to radiation injury.

TABLE 1

Effect of radiation dosage on biologic systems

LIMIT	RADIATION DOSAGE
	rep
Limit of safety for man	0.3 (per week)
Lethal for man	800
Lethal for insects	25,000
Lethal for vegetative bacteria	50,000–500,000
Food sterilization (bacterial spores)	1,000,000–4,000,000
Virus, toxin, or enzyme inactivation	more than 5,000,000

The radiation sensitivity varies widely with different kinds of microorganisms and with the metabolic activity. Much higher levels of radiation are required, for example, to kill bacterial spores as compared to vegetative cells, and a sufficient safety

[1] Presented at the Dietetic Section, Tri-State Hospital Assembly, held in Chicago on May 5, 1954. Journal Paper No. 92, American Meat Institute Foundation.

factor, as indicated in the table, is employed to assure that all spores in a food are killed. Other factors that influence radiation sensitivity of microorganisms include population densities and other environmental factors. Thus the sterilization dosage required will vary with microbial flora present as well as with the individual characteristics of the foods. Results thus far indicate that beta and gamma rays are equally effective in killing microorganisms.

BETA VS. GAMMA RAYS

The major difference in the use of the two types of radiation is that beta rays do not have much penetrating power unless very high voltage generators are used and, therefore, at present would be of primary value only for surface sterilization of foods, while gamma rays have effective penetrating power and, therefore, would be applicable for both surface and interior sterilization of food products.

With machines producing beta rays, sterilization dosages (2 to 3 million rep) are achieved in a matter of seconds, and this rapid action would be advantageous for continuous line operation in food processing. The low penetrating power of beta rays, however, limits the thickness of the sample that can be effectively sterilized. By irradiating from both sides with the use of a 5-million-volt generator, for example, the maximum thickness of a sample of meat that could be sterilized effectively would be approximately 1 in.

While the beta-ray machines can be converted to produce gamma rays, a great loss in power efficiency occurs. X-ray machines may also be used.

Major attention at present, however, has been concentrated on the use of radioactive materials that emit primarily gamma rays. The availability of gross fission products from the Atomic Energy Commission has prompted the Commission to investigate industrial uses for these waste materials. Radioactive cobalt also is available for experimental work. The source Cobalt 60 for experimental work, used by the American Meat Institute Foundation and Food Research Institute at the University of Chicago, consists of a hollow cylinder of cobalt shielded by approximately 1 ton of lead that has sufficient capacity to irradiate approximately ¼ lb. meat at a time. The installation has a unique feature in that the source is refrigerated, and radiation treatments can be carried out at a variety of temperatures. The control of microbial growth by refrigeration of the sample is also of great importance since 18 hr. are required to provide a dosage of 1½ million rep.

Radioactive materials lose their potency with time, which is a disadvantage. Radioactive cobalt, for example, will lose approximately 50 per cent of its effectiveness in a five-year period. Such a source of gamma rays, of course, cannot be turned off and on like beta ray generators.

Mixed beta and gamma rays produced by nuclear reactors with proper shielding to screen out neutrons, or gamma rays from the fission gases, may also be used. With the type of radiation sources indicated and the radiation dosages, it is clear that a wide variety of food products, pharmaceuticals, and other pure chemicals can be effectively sterilized. Many problems, however, are associated with irradiation of foods and other materials.

OFF-FLAVORS DUE TO IRRADIATION

Experience in our laboratories as well as at other institutions has clearly shown that serious deficiencies in the acceptability of the foods occur with sterilization dosages. With meat, for example, very objectionable off-flavors and odors are produced, and discoloration of the meat also occurs. In decreasing order of sensitivity, milk, meat, vegetables and fruits, pharmaceuticals, and other pure chemicals are susceptible to irradiation. Thus, detectable off-flavors and odors are produced in milk and meat with radiation levels of approximately 5 to 10 per cent of those necessary for sterilization, for example, while ten times these dosages produce no flavor changes in apple juice.

It should be pointed out, however, that relatively small gross chemical changes occur in these products during irradiation even though profound changes occur in acceptability. It has been estimated that not more than 0.003 per cent of the chemical bonds would be broken by the use of sterilization dosages. This clearly points out the difficulties associated with evaluating the nature of the chemical reactions that occur and the products of these reactions. And, for irradiation to be successful as a method of processing foods, it will be necessary for techniques to be devised to circumvent the production of these off-flavors, odors, and discolorations.

Three major techniques have thus far shown some promise in this regard. These are:

(a) The addition of certain agents, such as ascorbic acid, that are more readily affected by irradiation than components of the food product.

(b) The use of low temperatures during irradiation (irradiating frozen products).

(c) Avoidance of the presence of oxygen in the sample or atmosphere during irradiation insofar as possible.

A major limitation to the use of these techniques, however, is that in some cases those techniques which reduce the undesirable chemical changes also increase the resistance of microorganisms to the lethal effects of irradiation. Thus, there may be no net advantage to the use of some of these procedures.

Another major problem should also be discussed. It is necessary to take careful precautions for protecting the workers from the rays. Suitable installations for protecting the workers must, therefore, be made, which add to the cost. Installation and han-

dling problems would be particularly important in commercial applications using radioactive materials. At present, insufficient information is available to evaluate reliably the comparative costs of sterilization of foods by irradiation as compared to heat processing.

PROBLEMS FOR RESEARCH

From a biochemical and nutritional standpoint, the major problems requiring extensive research include: (a) detection and prevention of off-odors, flavors, and discoloration; (b) changes brought about by enzymatic activity and nonenzymatic activity during storage and distribution of the irradiated products; and (c) extensive studies to ascertain the effects of irradiation on the nutritive value of the foods as well as the wholesomeness of the products, i.e., to determine if any toxic materials are produced. An extensive program of research is now under way in this country and abroad on the irradiation of foods, pharmaceuticals, and other products. These studies include specific programs to obtain information on the above three problems. Experiments are being conducted to determine (a) the chemical changes that occur in foods during irradiation as well as in purified systems of carbohydrates, proteins, or fats, and (b) the nutritive value of irradiated foods and of specific food components. An important part of this program will also be devoted to long-term feeding studies with several species of animals to ascertain if any deleterious effects occur when several generations of animals are fed various irradiated foods.

Certain other aspects of irradiation of foods are also of interest. The possibilities of using lower levels of radiation to prolong the shelf-life of prepackaged foods, for example, appear promising. Studies conducted in the Divisions of Bacteriology, Physical and Analytical Chemistry, and Biochemistry and Nutrition of the American Meat Institute Foundation, supported in part by the Atomic Energy Commission, have shown that the shelf-life of prepackaged meats may be extended fivefold by low-dosage radiation (approximately 50,000 rep). Little, if any, production of off-flavors, odors, or discolorations could be detected with this level of irradiation. We wish to emphasize, however, that the acceptability of such products after storage and cooking has not yet been adequately demonstrated. This work is being continued with the use of a wide range of radiation dosages and sample treatments.

Of course, during storage chemical changes occur in foods that are not due to bacterial spoilage. Thus, even with sterilizing doses, certain enzyme systems are not inactivated, and breakdown of the fats, proteins, and other constituents may occur during storage to such an extent that the product would be unacceptable. Such reactions may be minimized by proper selection of packaging materials and chemical additives. At this time, however, it appears possible that a combination of mild heat (to inactivate these enzyme systems) and irradiation may ultimately prove to be the best processing method.

I would also like to point out in conclusion that other techniques for processing meat, in addition to irradiation, are being studied at the Foundation. These techniques include dehydration and diathermal processing studied by the Divisions of Histology and Physical and Analytical Chemistry.

SUMMARY

A radically new processing method for foods—irradiation with beta or gamma rays—is under investigation in a number of laboratories. This process has also been called "cold sterilization," since sterilization of the product is achieved with only a small increase in temperature. Beta rays (high-speed electrons) are produced primarily by high-voltage generators and have limited penetrating power. With generators now in use, the maximum thickness of a piece of meat that could be sterilized by irradiating from both sides, for example, would approximate 1 in. Gamma rays (from radioactive cobalt or gross fission products from the Atomic Energy Commission), however, give effective penetration.

But, while killing microorganisms, certain undesirable flavor, odor, and color changes occur in foods during irradiation at sterilization dosages which must be solved before commercial application can become a reality.

Prolonging the shelf-life of prepackaged foods, such as meat, by low level irradiation appears to offer more promise.

Effective safeguards must be taken to protect personnel from radiation exposure. Installation and operational problems with radiation sources are also important considerations. Programs of research on these and other problems are discussed.

REFERENCE

(1) Schweigert, B. S., Niven, C. F., Doty, D. M., and Kraybill, H. R.: Cold Sterilization of Meat. American Meat Institute Foundation Circ. No. 10, Feb., 1954.

The Korean probably has a higher ascorbic acid intake normally than any other racial group in the world, according to Herbert Pollack, writing in *Nutrition under Climatic Stress* (Washington: National Academy of Sciences—National Research Council, May, 1954). The basic Korean dish, in addition to fish and rice, is *chimche*, a fermented cabbage made with garlic and red peppers and pimientos. Ascorbic acid analyses of *chimche* done at the 406 General Medical Laboratory in Tokyo indicated that it contains as much as 126 mg. per 100 gm.

Odd Dietary Practices of Women[1]

CECILE HOOVER EDWARDS, HATTIE McSWAIN, and SUSIE HAIRE[2]

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MIXED traditions and taboos about foods existed even among the Hebrews of early Semitic periods. Only a limited number of investigations, however, have been made of the unusual or odd dietary practices of women, particularly those of pregnant women.

Dickins and Ford (1), Hertz (2), and Whiting (3) have referred to the practice of eating such substances as starch and clay. In anthropologic literature, this practice is known as geophagy, which has been defined as earth-eating among some Indian and Negro tribes. Since the existence of geophagy has been reported from various parts of the world, it would seem that the practice is not limited to any particular ethnic group or spatial area.

In a survey of rural Negro children in Oktibbeha County, Mississippi, Dickins and Ford (1) observed that 30 to 38 per cent of the 209 children studied had eaten dirt that school year.

The existence of dirt- and starch-eating in North Carolina first came to the attention of Hertz (2) through her work with Negro mothers. According to her, mothers defend themselves by pointing out that they eat dirt when pregnant because "pregnant women have 'cravings.'" She concluded that the habit of eating starch and clay was sex-linked, since there were no reports of adult men who ate either substance.

According to Whiting (3), the practices of clay- and starch-eating are closely associated. While working on a health education project sponsored by Bennett College in Greensboro, North Carolina, Whiting reported that two types of clay were eaten, red and white, which were described as tasting the same—sour and "puckerish." White clay was reported to be smoother and less gritty. A third substance, soot, was also referred to by Whiting. The soot was consumed (a) directly from stove pipes and (b) after being placed in bags, dipped in water, and boiled into soot tea.

The present study was undertaken to determine the nature and prevalence of unusual dietary practices of rural women who resided within a 75-mi. radius of Tuskegee Institute. As the study progressed, it became apparent that the practices of clay- and starch-eating were fairly common throughout the South and in some parts of the North. Additional information, therefore, was obtained from health agencies, doctors, and midwives in other southern states.

The objectives of the study were: (1) to compile information on "cravings" for foods which are normal dietary constituents, (2) to study the practice of eating foods or substances which do not conform to the normal dietary pattern, (3) to investigate the influence of superstitious beliefs, food taboos, customs, and traditions on the dietary habits of women in normal health and during pregnancy, and (4) to interpret and evaluate the data on the basis of (a) reasons given for ingestion or non-ingestion of specific substances and (b) the nutritive values of the foods and/or substances.

EXPERIMENTAL PROCEDURE

By use of the normative survey method and personal interviews, information on odd dietary practices of women in the South was obtained. Questionnaires were directed only to individuals who were in close contact with the eating habits of women who lived in rural and suburban areas.

The names of 300 Negro women who had given birth to babies from 1949 to 1951 were randomly selected from the postpartum records of the John A. Andrew Memorial Hospital, Tuskegee Institute. Questionnaires were sent to these women to obtain information on their dietary habits during pregnancy and in normal periods. The average income of the families of the 150 women who returned the questionnaires was $1750, ranging from $168 to $4000. The ages ranged from thirteen to forty-nine years—average twenty-five years. The average education

[1] Received for publication March 29, 1954.

[2] The authors wish to express appreciation to George C. Stoney, Dr. W. A. Mason, and Dr. W. A. Hunter for their assistance during this investigation, and to the staff of the John A. Andrew Memorial Hospital for making available their postpartum records.

was seventh grade, with a range of from none to sixteen years. These women were farmers, domestic workers, and homemakers. The majority (55 per cent) rented their homes; 15 per cent were sharecroppers; and 19 per cent owned their homes. In this group, 87 per cent of the diets were rated fair, poor, or very poor; 10 per cent were rated good; and 3 per cent were rated excellent.

A random sample of 50 women was chosen from the group of 150 who returned the questionnaires. Visits were made to their homes to verify and supplement the information obtained from the questionnaires.

In addition to the 50 women who were randomly selected for home interviews, 61 other women were interviewed at maternity clinics in Alabama, and at home and maternity clinics in Georgia.

One hundred questionnaires were sent to health agencies, experiment stations, and hospitals in seventeen southern states; of these 47 were returned. Personal interviews were also held with 45 midwives (mostly of the "granny" or non-nurse type), 40 public health nurses, and 6 doctors in Alabama and Georgia. Thus data were obtained from a total of 211 individual women (111 by personal interview), 47 health agencies, and 91 persons engaged in health work, either professionally or as midwives.

RESULTS AND DISCUSSION

The food habits of man are intimately interwoven with his cultural and religious beliefs. In his effort to survive, he has turned to food not only as an energy-giving and body-building material, but also as a refuge from the many ills which beset him. Even today, our culture retains some of the early effects of animism, demonology, and metaphysics which have influenced the practices of peoples as generations passed.

According to Mason (4), the medical prescriptions in early Egyptian culture showed a strong belief in the power of the supernatural. The concept that certain plants picked in the moonlight were particularly efficacious in the preparation of medicine was accepted by the peoples in that country and others, and it is still not infrequently encountered in modern popular medicine. More rational was the following prescription of the same period.

> To cure granulations of the eye, you will prepare a remedy of collyrium, verdigris, onions, blue vitriol, powdered woods. You will mix it all and apply it to the eyes of the sick person.

In those early times, the body was seen as a temple of the soul. The concept that illness and death were due to sin existed, according to Mason, in early Babylonian medicine. Evidence of this idea is found in adherence to the bath, the selection and preparation of foods, and concepts of sanitation.

The ritual of bathing and washing of the hands before meals in biblical times served a dual purpose. Whereas washing the hands before meals was done both for the sake of cleanliness and as a religious duty, symbolic of the cleansing of the soul, washing them after the meal was practiced as an evidence of duty and of respect to other persons. This practice today seems to be based wholly on sanitary principles.

The selection and preparation of food was important in Hebrew religion and even today is highly ritualistic in Jewish families. Mason quotes the "law of clean and unclean meats" (Deut. 14: 3–8):

> Thou shalt not eat any abominable thing. These are the beasts which ye shall eat: the ox, the sheep, and the goat, the hart, and the roebuck, and the fallow deer, the wild goat, and the pygarg, and the wild ox, and the chamois. And every beast that parteth the hoof and cleaveth the cleft into two claws, and chewth the cud among the beasts, that ye shall eat. Nevertheless, these ye shall not eat of them that chew the cud, or of them that divide the cloven hoof; as the camel and the hare and the coney. For they chew the cud, but divide not the hoof. Therefore they are unclean unto you. And the swine, because it divide the hoof, yet cheweth not the cud, it is unclean unto you: ye shall not eat of their flesh, nor touch their dead carcass.

The prescribed instruction, "Ye shall not eat of any thing that dieth of itself. . ." (Deut. 14: 21) is practiced even today, on one hand as a ritual by those following Jewish tradition, and on the other hand by a much larger group because of adherence to modern sanitation and disease prevention and control.

Influence of Superstition on Food Habits

In the group of 211 Negro women studied in this investigation, many interesting "reasons" for certain dietary practices were given. For example, in Manning, South Carolina, there was evidence of a traditional belief that milk, eggs, fish, yellow vegetables, grapefruit, tomatoes, butter, liver, and beans should not be eaten. The basis for this belief was unknown. In Anniston, Alabama, this belief also applied to other foods, such as bacon, ham, and onions.

The eating of green foods appeared to be taboo during the postpartum period among women in Louisiana , and approximately one-third of the women who visit the County Health Department in Talledga, Alabama, were reported to eat only rice, potatoes, and milk during the postpartum period. It may be that lack of information on the metabolism of food has fostered the idea that the green color of vegetables might show up in the mother's milk.

Fish, too, is widely taboo; in North Carolina, Georgia, South Carolina, and Kentucky, as many as 35 per cent of the rural Negro women apparently adhere to this practice. Comments indicated that some felt it would poison them, and others stated

that it would prove fatal if consumed during a period of several weeks after childbirth. The combination of "fish and milk" was thought to be especially dangerous.

Other strange, ill-founded notions which were stated included: "Cheese, bananas, and ice cream will make you sick." . . ."Cooked cabbage and other 'strong-tasting' greens will upset the stomach and 'taint' the milk." . . ."Milk, eggs, and liver should not be eaten." . . ."If block magnesia is not eaten, the unborn will be marked." . . ."If the bark of trees is not eaten, the unborn will be marked." . . ."If clay is not eaten, the unborn will be marked." . . ."Sweet milk gives 'milk fever.' "

It is difficult to determine what experience formed the basis for these beliefs. The superstition that fish and milk must not be eaten together is probably based on digestive disturbances brought about in a few instances by factors entirely unrelated to the foods, or by foods which had been spoiled. Also, aside from being foods of high nutritional value, milk, eggs, and liver possess no similarity except that they all come from within the animal. Lack of knowledge regarding the nutritive value or desirability of certain foods in many instances appeared to be the major reason why women did not drink milk or eat green and yellow vegetables.

Food Cravings and Bizarre Food Intakes

Large intakes of familiar foods and intakes of substances not generally considered food were reported, both by the individuals in the survey and by the health workers. Of the women returning questionnaires, 55 reported "cravings," and although unfortunately, the listings of cravings were not accurately recorded for all of the 111 women interviewed personally, at least 40 of this group were reported to experience "cravings."

Most striking of all "cravings" was the practice of a large number of women of eating red and white clay, cornstarch, flour, and baking soda. These "foods" were part of the dietary pattern during pregnancy particularly and were eaten either because of superstitious belief that the substance had special powers or by custom. Some women stated emphatically, "The unborn will be marked if I don't eat it!" In many instances, the mother said that she had been told to follow this practice by her mother or grandmother. In other cases, it was stated that clay, starch, or baking powder relieved the nausea accompanying pregnancy.

The intake of some of these substances was quite large. As much as a 1-lb. box of starch might be consumed each day, and this practice appeared to be widespread in most of the southern states involved in the study, occurring in as many as 75 per cent of the women who attended some health departments. The practice of clay-eating, too, was quite common, being followed by as many as 50 per cent of the patients in some of the health departments and experiment stations which were queried. Another odd substance which was reported to be eaten was tree bark; the reason ascribed to this practice was superstition. For some women, block magnesia seemed to satisfy a craving, or prevented nausea, but the exact nature of the effect could not be determined.

It was interesting to search for further links in the chain of information relating to these cravings. Stoney reported (5) that the eating of clay in rural communities seemed to be a privilege reserved for the pregnant woman. In fact, disparaging remarks were made about women who continued this practice after their babies were born.

In interviewing midwives in Georgia, we became aware of one of the consequences of eating clay. Some midwives stated that they could tell whether the mother had eaten clay by observing the thickness of the "coating" over the newborn child. According to them, if the infant was coated with a thick white material (the vernex) which looked like flour, the mother had eaten clay during pregnancy. Otherwise, the "coating" would be thin.

Eating large quantities of cornstarch was explained as an attempt to satisfy a craving. Some women indicated that it "relieved nausea," or that they ate it because "mama" or "grandma" had told them to do so. Even in educated circles, this practice has been reported.

Because cravings for clay and cornstarch were more frequently reported by pregnant women (21.0 per cent) than by women during other periods 10.4 per cent), the authors felt it of interest to determine if these differences were significant. The chi-square was computed as an index of dispersion, using the hypothesis that there is no significant difference in the number of normal or pregnant women eating odd substances. A chi-square of 1.849 was found, which was not significant unless a one in five chance of being in error is acceptable.

This problem was also approached from another direction by computing the t value. Forty-five per cent (8) of the women who listed cravings when they were not pregnant ate clay, but, during pregnancy, the percentage increased to 64.9 per cent. The standard error of the per cent of increase was 14.098. A t value of 1.448 was found, which is not significant at the 1 or 5 per cent levels for 53 degrees of freedom. Consequently, by this standard, too, the difference in the craving for clay among normal and pregnant women does not seem to be significant.

Fifty per cent of the women who listed cravings ate cornstarch when they were not pregnant; during pregnancy, this percentage decreased to 32.43. The standard error of the difference was 14.071. A t value of 1.249 was found, which was not significant for the involved degrees of freedom. Thus, the difference in craving for cornstarch in normal and pregnant women does not seem to be significant.

Foods which are eaten in exceptionally large quantities and which as such or in the form used are not usually included in the American dietary patterns include: lard (as much as 1 lb. was consumed without bread every three days); coffee beans (chewed throughout the day); flour; dry oatmeal; baking powder (reported to relieve nausea of pregnancy); dry skim milk powder (the woman reported she could not drink it mixed with water, but that she ate 8 oz. dry per day); baking soda (the women started eating it for "heartburn." It then became a habit and was eaten throughout the day. Several cases were reported in Tennessee and a large number in South Carolina).

Many foods which ordinarily make up our diet were reported to be eaten in excessively large quantities, usually to satisfy "cravings." This list includes:

Apples	Ice cream
Banana pudding	Meat
Bananas	Meat, raw fat
Barbecue	Oranges
Cake	Peaches
Candy	Pears
Cheese	Pickles
Chicken	Plums
Cocoa and dry milk	Potato chips
Collard greens	Rhubarb
Crackers	Raisins
Cranberries	Starchy foods
Cucumbers	Strawberries
Eggs	Tangerines
Fish	Tomatoes
Grapefruit	Turnips
Grapes	Watermelon

Although these are familiar foods, their use in this situation is certainly not according to our cultural pattern. As an indication of the bizarre nature of some of these intakes resulting from "cravings," the intake of fourteen eggs a day was reported in one instance. Another reason for excessive intakes of ice cream, apples, potato chips, fish, and chicken was found to be superstition.

Of the 55 women who reported cravings on their questionnaires, 67.3 per cent were pregnant. It was also apparent that a greater number of foods were craved during pregnancy than during times when the woman's health was normal. Statistical evaluation revealed that significantly greater quantities of fruits, cereals, meats, vegetables, desserts, and beverages were eaten by pregnant women, but differences for consumption of bread, salads, fat, soups, and nuts were not significant. In Table 1 is tabulated the reported frequency of these cravings.

It has been postulated by some workers that a "craving" expresses a body deficiency which is satisfied by the ingested food. The literature on this subject, however, contains many conflicting observations. Whiting, in pointing out the difficulty in explaining why these substances were eaten (3), suggested that the practice had its genesis in an unconscious endeavor to compensate for certain nutritional deficiencies. What these nutritional deficiences were remains to be investigated. The suggestion that this is a problem in nutrition was put forth by that in-

TABLE 1

Foods and other substances craved by 55 women returning questionnaires

FOOD	NUMBER OF WOMEN REPORTING CRAVINGS	
	During times of normal health	During pregnancy
Fruit		
Apples		11
Bananas		4
Cranberries		1
Figs		1
Grapefruit		3
Grapes		8
Oranges		2
Peaches		3
Pears		3
Plums		2
Raisins		1
Tangerines		1
Watermelon	4	8
Cereals		
Potato chips	2	2
Rice		1
Spaghetti		1
Bread and bread substitutes		
Corn bread		1
Crackers		1
Flour		1
Meat and meat substitutes		
Barbecue		1
Cheese		4
Chicken		11
Chitterlings		1
Eggs, boiled		1
Fish	2	18
Liver		3
Pork chops		1
Sausage		2
Steak		1
Vegetables		
Collard greens		5
Corn		1
Cucumbers		1
Pickles	2	2
Tomatoes		3
Turnips		5
Desserts		
Banana pudding		1
Cake	3	2
Candy	6	2
Ice cream	4	7
Beverages		
Milk		1
Milk, chocolate		1
Other substances		
Clay	8	24
Corn starch	9	12
Paper	1	1

TABLE 2

*Composition of foods craved most often: 100-gm. portions**

FOOD	CALORIES	PROTEIN	FAT	CARBOHYDRATE	ASH	CALCIUM	PHOSPHORUS	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID
		gm.	*gm.*	*gm.*	*gm.*	*mg.*	*mg.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
Watermelon	28	0.5	0.2	6.9	0.3	7.0	12	0.2	590	.05	.05	0.2	6
Grapes	70	1.4	1.4	14.9	0.4	17.0	21	0.6	80	.06	.04	0.2	4
Bananas	88	1.2	0.2	23.0	0.8	8.0	28	0.6	430	.04	.05	0.7	10
Apples	58	0.3	0.4	14.9	0.3	6.0	10	0.3	90	.04	.03	0.2	5
Fish	205	19.0	2.5	0.0	1.3	21.0	218	1.0	—	.07	.70	4.2	2
Chicken	200	20.2	7.2	0.0	1.1	14.0	200	1.5	0	.08	.16	10.2	0
Cheese	398	25.0	32.2	2.1	3.7	725.0	495	1.0	1400	.02	.42	—	0
Turnips	32	1.1	0.2	7.1	0.7	40.0	34	0.5	—	.05	.07	0.5	28
Collards	40	3.9	0.6	7.2	1.7	249.0	58	1.6	6870	.11	.27	2.0	100
Ice cream	207	4.0	12.5	20.6	0.8	123.0	99	0.1	520	.04	.19	0.1	1

* From Agriculture Handbook No. 8 (6).

vestigator on the assumption that the human organism, through a system of chemical checks and balances, sets up within itself certain appetites which, when satisfied, tend to restore the normal chemical balance necessary for efficient and healthful functioning.

These strange practices do not seem to bring about any harmful or pathologic symptoms. Hertz (2) advanced the hypothesis that clay- and starch-eating provide satisfaction for individual needs and suggested that these needs include the desire to satisfy hunger pains and the pleasure of chewing.

In our laboratory, in an effort to estimate the effect the craved substances might have on the individuals who ingested them, the nutritional value of the substances which were actually food was reviewed (Table 2).

In the case of foods of high-water content, the stomach would be filled, thereby satisfying hunger pains. Because of the nature of the food, however, it would leave the stomach comparatively rapidly, thereby setting in motion again the same "craving." Thus it may be that the "craving" expressed for certain foods or other substances is merely an indication of inadequate caloric intake (i.e., total quantity of food), since the main contribution of these foods is either carbohydrate or water. Cornstarch and other high-carbohydrate foods, for example, would supply calories (energy) and might keep the blood sugar at a more normal level, thereby preventing hypoglycemia and the attenuating symptoms of hunger.

Though no reference was made to it, the color of red clay may have been associated with rich blood for the mother and that of white clay with her milk.

These explanations are, of course, pure speculation. Detailed studies of blood and tissue changes are necessary before one can set up a hypothesis regarding the effect of clay, cornstarch, and other substances on the body. Such studies are essential in explaining the mechanism of the "craving" for specific substances as expressed by those who eat them.

Paucity of Knowledge about Unusual Dietary Practices

That many public health officials were unaware of these superstitions and traditional dietary practices was evidenced by lack of specific information on the questionnaires returned and from the paucity of information obtained through personal interviews. Stoney has observed (5) that the custom of hiding one's superstitions from those who might ridicule them is a powerful one. According to him, some public health nurses with years of experience in clinic and home visiting were completely unaware that such strong food taboos exist among their patients. He states: "In many instances, the patient simply learned what diet the nurse wanted her to tell her she was eating, and graciously obliged."

For example, the eating of fish seems to be taboo after parturition. According to Stoney:

> Along the Georgia coast, especially, fish is such a staple food that its removal from the mother's diet as soon as the baby is born must demand important nutritional readjustments. It was surprising to note that none of the public health nurses interviewed were aware of this taboo, although they had been interviewing patients about their diets for many years.

General Observations

Information derived from questionnaires and personal interviews revealed several generalizations that might be made in connection with dietary habits.

(a) In general, the first meal immediately after the baby was born, and often for several days thereafter, consisted of white bread toast, buttered grits, and black coffee. In some instances, a diet of this type was continued for each meal for as long as a month. Rice, mashed potatoes, and other starches may be used to vary the pattern during this period. Some women avoided drinking sweet milk during the first week after the birth of their babies because of the fear of "milk fever."

This custom of eating light, starchy foods immediately after parturition may be traced back to generations when sanitation and facilities for food storage and preservation were poor. Feeling that she might be upset by spoiled or strong food (and thus the food she gave the baby would be affected, possibly even endangering his life), the mother avoided anything that might spoil or have a strong taste. Today the dangers of food spoilage are much less real. Old taboos, however, are still powerful and thus have a marked effect on the well-being of mothers who may already be suffering from lack of proper diet.

(b) During this period, "store bought" bread is eaten in preference to the usual cornbread and biscuits. Since this is considered a delicacy by country families, it may be an "attention-getting" device comparable to the postnatal craving for sweets and other foods.

(c) Attitudes and food practices seemed more "normal" in and near cities. As one moves further out to the rural areas, the attitudes and food practices become more unfamiliar. This may be directly related to the influence exerted by hospitals, newspapers, radios, and other social agencies in the city.

(d) Direct experiences, such as contact with other women, whose babies had been delivered in hospitals and who had been given adequate diets, seem to have more effect than the recommendations of public health nurses in the clinics. Thus, the women believe what they see rather than what they are told.

(e) Older individuals in the community, such as the grandmothers, have a strong influence on the attitudes of the younger women toward food. It is not strange, then, that taboos and superstitions about food should be passed down from generation to generation in rural communities where little opportunity to correct them is available. Thus, where hospital service is not available, the old midwives and "grannies" teach the younger mothers their only knowledge of proper food. Where the mothers have access to hospitals and physicians, they often defy the teachings of the "grannies."

MIDWIVES' INFLUENCES

And what is the attitude presented by the midwife? Only limited information is available. However, through interviews, their attitudes seemed to fall into three categories:

(a) A few midwives believed that a woman fares better if she eats a light, mostly starchy diet for the first few weeks after parturition.

(b) A larger number of midwives were completely convinced that the newer recommendations of health departments were sound and told these to their patients, relating this to what was done in hospitals.

(c) A majority believed that the patient should eat what she had been accustomed to eating, giving no additional recommendations on diet.

This picture is distressing and tells a story which might well be in the realm of fantasy. In some states, the only hope of the rural mother to improve her condition and that of her infant is the midwife. Perhaps, the solution to the problem is that of reeducating midwives in the newer knowledge of nutrition, using effective teaching aids that will show a clear picture of the value of an adequate diet.

The task of improving nutrition in low-income rural groups is certainly a difficult one, not only because of inadequate funds and the paucity of knowledge concerning the nutritional value of food, but also because of the strong influence of superstition and tradition on the dietary habits of this group. The ideas about food are firmly embedded in the older generation whose influence on the younger mothers is powerful. Their limited education and the lack of adequate communication further restrict the influence of nutrition education programs on the dietary practices of the rural population.

Some progress is being made through clinics, but not until the intricate web of emotions and superstitious beliefs can be more clearly understood, can we make real strides toward improving the nutritional status of this group. As progress is made in this area, infant and maternal mortality, morbidity, stillbirths, and abortions will decrease.

And, as we are able to convert this large group of rural families to the doctrine of sounder dietary practices, so will the health of the community and nation improve.

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Average caloric intake of American women in four cities—Birmingham, Buffalo, Minneapolis–St. Paul, and San Francisco—is 1780, according to the 1953 annual report of the Chief, Bureau of Human Nutrition and Home Economics, U. S. D. A. This intake appears in general to be adequate for food energy needs as indicated by the relation of weight to height in these women. Average calcium intake, however, was 0.6 gm. per day, as compared with 0.8 gm. recommended by the National Research Council.

Nutritive Value of Parboiled Wheat Used in the Near East[1]

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PARBOILED wheat, or *burghul*, is unique among the food materials used in the Eastern Mediterranean area. As far as we know, it is not used extensively in other parts of the world. An analogous product, parboiled rice, however, is well known and the parboiling process as a means of preserving the vitamin content of rice has been studied. Nutritionists often overlook the fact that wheat also yields a corresponding product with equally interesting properties.

Weather conditions in the Near East are peculiarly suited to the manufacture of parboiled wheat, which involves drying in the sun. The summer is hot and dry, with no rain. Wheat harvested in June is converted into parboiled wheat in mid-summer. Its preparation would be impossible if interrupted by rain or showers.

It is usually prepared by the individual household, not in large factories; the procedure detailed here is that which we have observed in the villages in the Lebanon area.

PREPARATION

A large-grain wheat is regarded as the most desirable. After separating the chaff, the wheat is washed quickly in cold water and placed in an uncovered, round-bottom copper cauldron, large enough to contain from 20 to 50 kg. wheat. Enough cold water is added to cover the wheat 5 to 10 finger-breadths, and the contents of the cauldron are then heated to boiling, using any appropriate fuel—wood kindling in the mountain villages or manure cake in the areas bordering the desert. The heating is continued with occasional stirring until the grains of wheat can be easily crushed between the fingers, giving evidence that the water has penetrated into the kernel; this may require about 3 hr. Water is added if necessary. During the cooking, the excess water is either evaporated or absorbed, so that at the end of the cooking process, nothing but the moist wheat remains in the cauldron.

The wheat is then removed with a sieve-like ladle and spread in thin layers to dry in the sun. This usually takes place on the roof of the house which is flat and probably of cement. The wheat may be spread on jute bags, straw mats, or directly on the roof. It is turned over perhaps once or twice a day; the drying requires from two to three days. The resulting material, which is hard and of a yellow-brown color, is then packed in jute bags or in tins and can be kept without difficulty until the next harvest, or if necessary for several years. Its appearance is similar to that of cracked wheat, with which it is often confused.

Before being used for food, the dried parboiled wheat is ground. Stone mills, appropriate for this purpose, are found in every village. Before grinding, the dry material is sprinkled with water, just enough to moisten it, and after grinding is sieved and separated usually into three sizes. The largest size is used directly for cooking, much as rice might be used. The second, or medium size, is used in making the Lebanese national dish *kibbeh*, in which it is cooked with meat. The third or finest grade is of a flour-like consistency; this is usually discarded or used as poultry feed.

Parboiled wheat is known throughout the Near East as *burghul*. It cannot be used to make bread, but as a food material is employed as an alternative to rice. Rice is desired for its white color and other qualities, but parboiled wheat is regarded by the rural peoples who use it as superior to rice as a source of energy and vigor. It is estimated that in Syria, for example, about one-fourth of the wheat crop is converted into parboiled wheat.

The last few years have shown a world deficit in rice, but a surplus in wheat. More than one food

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TABLE 1

Comparison of composition of as-harvested and parboiled wheat

ANALYSIS	AS-HARVESTED WHEAT	PARBOILED WHEAT
Moisture (%)	9.4	10.3
Protein (%)	12.3	11.7
Fat (%)	2.3	2.3
Ash (%)	1.6	1.8
Carbohydrate-by-difference (%)	74.4	73.9
Thiamine (mg./100 gm.)	0.50	0.31
Riboflavin (mg./100 gm.)	0.11	0.03
Niacin (mg./100 gm.)	4.3	4.8

economist has suggested that this situation might be solved by converting some of the wheat into parboiled wheat and then persuading some of the rice-eating peoples to accept it as a rice substitute.

NUTRITIVE VALUE

The analyses shown in Table 1 are for parboiled wheat and for samples of the whole wheat from which the parboiled wheat was prepared. The thiamine was determined by the thiochrome method; riboflavin and niacin were determined microbiologically. It will be noted that in the parboiling process, large amounts of the thiamine and niacin were retained. These data resemble those reported for parboiled rice (1, 2). The low value obtained for the riboflavin in parboiled wheat is undoubtedly due to its destruction by sunlight in the drying process.

A simple growth experiment with albino rats was carried out to compare the gross nutritive value of wheat and parboiled wheat. Nine pairs of littermate weanling rats averaging 40 gm. in weight were fed these two materials as the sole items of food intake. The two forms of wheat, ground to pass 20-mesh, were fed *ad libitum*. However, the total food intake was measured and was the same for the two groups. The curves recording the average increases in weight (*Fig.* 1) indicate almost identical growth rates.

A protein efficiency experiment was likewise carried out on whole wheat and parboiled wheat, measuring the nutritive value as the ratio of grams of growth per gram of protein fed, using standard procedure. Two groups of litter mate weanling rats were fed similar diets which contained the usual vitamin supplement; the protein on a 10 per cent level was the limiting factor. The paired-feeding technique was used, the food intake measured daily, and the experiment continued for thirty days. The results of the protein efficiency measurement, shown in Table 2, indicate that the parboiling process does not significantly alter the nutritive value of the wheat protein.

TABLE 2

Protein efficiency of wheat and parboiled wheat by the rat growth method

PROTEIN SOURCE	NUMBER OF RATS	FOOD INTAKE	AVERAGE GAIN IN WEIGHT	PROTEIN EFFICIENCY RATIO
		gm.	*gm.*	
Wheat	6	205.8	26.3	1.28 ± 0.13
Parboiled wheat	6	205.7	26.0	1.25 ± 0.14

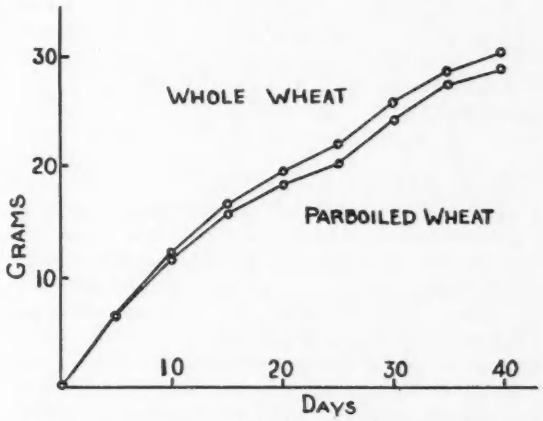

FIG. 1. *Increase in weight of rats fed whole wheat and parboiled wheat as the sole nutrient. Each curve represents the average for nine animals.*

SUMMARY

Parboiled wheat in the Near East is prepared by submitting whole grain wheat to a brief boiling followed by rapid drying in the hot sun. The product does not deteriorate on storage.

Analysis shows that about one-fourth of the thiamine and niacin, and about three-fourths of the riboflavin are lost in the parboiling process.

Wheat and parboiled wheat, when fed to rats, produced equally satisfactory growth over a period of thirty days.

The nutritive value of the protein fraction, measured in terms of the protein efficiency, remained unaltered when wheat was converted into parboiled wheat.

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One must learn by doing the thing; for though you think you know it, you have no certainty until you try.—*Sophocles, 445 B.C.*

The Philosophy of Food Fortification[1]

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THE first important addition of an essential nutrient to a staple article of food in this country was initiated in the state of Michigan nearly thirty years ago in 1924 when the Michigan Department of Health and the Michigan Medical Society induced salt manufacturers to make available at no additional cost to the user table salt to which had been added a small quantity of iodine. It had been well established some years earlier that insufficient intake of iodine in large areas of the United States was the cause of simple goiter. It had been shown also that the addition of very small quantities of iodine to a food could prevent goiter.

The practice of iodizing salt has been continued and extended so that today, more than half of the table salt sold in the entire country contains added potassium iodide, and the occurrence of simple goiter has been very markedly reduced. I mention this development for two reasons. (a) It illustrates clearly what can be done to improve health when a widespread deficiency in our diets is recognized and proper measures worked out by competent scientists are taken to remedy it. This is a fine example of desirable food fortification. And (b) leaders in nutrition and medicine are practically unanimous in the opinion that even greater benefits can be derived if all table salt used in this country were iodized. To accomplish this, consumer demand for iodized salt must be increased by continuing and extending the education program.

For the past twenty-five years, the Food and Drug Administration has had to deal with innumerable proposals to add vitamins and minerals to foods. There is scarcely a manufactured article of food or drink for which such additions have not been considered. The motive behind most of these practices is well illustrated by an old cartoon which depicts a meeting of the board of directors of an oil company, with the chairman making this statement: "Our research department has succeeded in adding vitamin B to our gasoline; now it is trying to think of a reason for doing it." The addition of a vitamin or a mineral to a food has too frequently been considered from the standpoint of its sales appeal rather than benefits to the user.

VITAMIN D ADDED TO MILK

The addition of vitamin D to milk to prevent the development of rickets in infants was initiated about twenty-five years ago, with the endorsement of the medical profession. Vitamin D is necessary for the proper deposition of minerals in bones; if it is not available, the bones become soft and deformed when pressure is put upon them. When I came to Washington in 1926, I could look out of my window almost any time of the day and see several bow-legged children; this was not an unusual sight in many parts of the city. In the early 20's it was determined from surveys that up to 75 per cent of the babies under one year of age in our large eastern cities showed some degree of rickets. Today this disease has practically disappeared, and the universal practice of adding vitamin D to evaporated milk and the widespread fortification of fluid milk with this vitamin have played an important part in this disappearance. Evaporated milk is the most widely used food for artificially fed infants.

I do not wish to minimize the importance of educational measures such as the teachings of the nutritionists or the broad and effective campaign of education carried out by the Children's Bureau of the Department of Health, Education, and Welfare, but I wish to emphasize that the nutritional improvement of a food is entitled to its share of credit.

LEGISLATION TO PROTECT OUR FOOD

The passage of the federal Food, Drug, and Cosmetic Act in 1938 had an important bearing on the nutritional improvement of foods through its provisions for establishing standards for foods and also

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for labeling of foods for special dietary uses. This law gives authority for establishing standards for foods in the following language: "Whenever in the judgment of the Secretary such action will promote honesty and fair dealing in the interest of consumers, he shall promulgate regulations fixing and establishing for any food under its common and usual name so far as practical a reasonable definition and standard of identity. . ." Note particularly that the standard must, "in the judgment of the Secretary, promote honesty and fair dealing in the interest of consumers."

A standard is promulgated only after a public hearing has been held at which testimony is given under oath. The standard can be based only on the evidence that is made a part of the record at the hearing. A proposed standard is first published after it has been carefully considered by scientists of the Food and Drug Administration to determine that it is accurate with respect to the facts involved, by administrative officers to determine if the standard will accomplish the desired purpose, and by attorneys to determine its adequacy from a legal standpoint. A limited time is permitted for any legal objections before it is published in final form and the effective date set. A standard is subject to review by the District Court of Appeals of the United States if anyone is adversely affected by it.

ENRICHMENT OF CEREALS

When hearings were held in 1940 for the purpose of establishing a standard for flour, there were a considerable number of proposals by the industry to fortify flour with vitamins and minerals. These proposals did not form any definite pattern that would serve as a basis for a standard, but seemed to reflect a rapidly-growing practice. There seemed to be general agreement that there should be a separate standard for flour that was nutritionally improved. Most of the differences of opinion were resolved by the following principles considered essential in maintaining the requirement that a standard shall promote honesty and fair dealing in the interest of consumers.

If a vitamin or mineral is added to flour, there should be evidence of deficiency of the nutrient in a substantial segment of the population. Such evidence could be obtained from surveys of the composition of dietaries used or actual occurrence of deficiency diseases. A vitamin, the need for which in human nutrition has not been established, should not be added. A vitamin which is destroyed in large measure either by storage of the flour or in the process of baking should not be added. The quantity of a nutrient added should be sufficient to make an important contribution to nutrition, but should not be in excess of what may actually be needed.

The average consumption of flour was estimated at that time to be 6½ oz. daily; this quantity of flour supplies approximately one-fourth of the caloric requirements. It seemed reasonable, therefore, that 6½ oz. flour should supply not less than one-fourth of the daily requirement of an added nutrient and not more than the full requirement.

Evidence was subsequently adduced which justified the following additions to flour: thiamine, riboflavin, niacin, and iron. Calcium and vitamin D were made optional ingredients. Physicians testified that there was insufficient clinical evidence of deficiency of vitamin D and of calcium to justify making them required ingredients. A number of names were proposed for a flour fortified with these vitamins and minerals, but the one that seemed to be regarded most favorably by witnesses was "enriched flour," which was adopted.

Subsequently when hearings were held on standards for bread, it was logical to conclude that a product called "enriched bread" should have the composition that would result if enriched flour were the only cereal used in its manufacture. Such a proposed standard was published in 1943, but it was not made effective then because the Food Administrator of the United States Department of Agriculture believed that with the shortage of foods during the war it would be desirable to have greater latitude in the choice of ingredients than permitted by the standard. Further hearings were held on bread standards in 1950 and 1951, and a standard for this food became effective in August 1952.

Standards for enriched macaroni and enriched corn products have also been established. Enrichment of these products follows the same pattern of providing the consumer with the same quantities of thiamine, riboflavin, niacin, and iron, with calcium and vitamin D as optional ingredients. By establishing these standards for enriched cereals, and because of court decisions establishing their validity, the term "enriched" as related to foods, has acquired a special significance, a significance that makes it easier for the educator to impart to others an understanding of the nutritional value of our foods.

MARGARINE FORTIFICATION

When the standard for oleomargarine was under consideration, there was no evidence of vitamin A deficiency in important segments of our population. However, it was a fact that butter contributed a substantial part of the vitamin A intake for our entire population. It was also known that vitamin A deficiency occurred in young children in Denmark during the World War I when butter was replaced by oleomargarine. It, therefore, seemed wise to provide a standard for oleomargarine to which vitamin A was added. The present standard requires that if oleomargarine is represented to contain vitamin A, it must contain not less than 15,000 International Units of that vitamin per pound, which is the average vitamin A content of butter.

The establishment of a standard under the Food, Drug, and Cosmetic Act requiring the presence of certain vitamins and minerals in prescribed amounts, such as the standard for enriched bread, does not make it compulsory for a baker to make such a product unless he sells it under the name used in the standard. However, twenty-six states have enacted laws prohibiting the sale of bread or flour that has not been enriched. Five southern states have also passed laws making it compulsory to enrich corn products in accordance with the federal standard. These actions unquestionably have had a real part in bringing about the disappearance of pellagra and of riboflavin deficiency which were widespread in the South between 1930 and 1940, and improved nutrition elsewhere. The fortification of all oleomargarine with vitamin A and all evaporated milk has been done voluntarily.

PHILOSOPHY OF FORTIFICATION

In setting a standard for a fortified food, it is important to set a maximum as well as a minimum limit on the extent of nutrient addition and also to avoid, wherever possible, the use of optional ingredients. If no maximum had been set for the vitamins and minerals now used in enriched bread, I am sure we would have seen competition between bakers in adding larger and larger amounts of various nutrients in order to gain a trade advantage. These greater additions would have been of no benefit to most of us, the consumers, and difficulties would have arisen for the nutrition teacher in explaining just what enriched bread contributed to the diet. Optional ingredients also create the same difficulties in explaining the nutritive value of foods.

The greatest guiding influence we have had in this country for bringing about nutritional improvement of our foods through the addition of nutrients has been the Food and Nutrition Board of the National Research Council. Although the National Research Council is not supported by government funds, it will establish committees of scientists to advise any governmental agency on problems of a scientific nature. The Food and Nutrition Board was established in 1940. In 1941, at the request of the Commissioner of Food and Drugs, the Board provided the Food and Drug Administration with a statement of policy with respect to the addition of vitamins and minerals to foods. This was recently revised, and although rather lengthy, today it is the best statement of philosophy of food fortification that we have. It reads as follows (1):

> When the Food and Nutrition Board, originally the Committee on Food and Nutrition, was organized over a decade ago, there was an opportunity for applying significant basic developments in the field of nutrition. Certain deficiency diseases were prevalent, and synthetic vitamins were being used in foods with little or no scientific guidance. To deal forthrightly with these problems, a statement of policy was adopted. The Board has every reason to believe that this step has proved to be in the public interest. Since that time there have been new developments and valuable experience has been gained. The Board has therefore reconsidered its policy and has revised as follows the statement of principles upon which the policy is based.
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> (1) The Board, within carefully defined limitations, endorses the principle of the addition of specific nutrients to certain staple foods for the purpose of maintaining good nutrition as well as for correcting deficiencies in the diets of the general population or of significant segments of the population. The requirements for endorsement of the addition of a particular nutrient to a particular food include (a) clear indications of probable advantage from increased intake of the nutrient, (b) assurance that the food item concerned would be an effective vehicle of distribution for the nutrient to be added, and (c) evidence that such addition would not be prejudicial to the achievement of a diet good in other respects. These requirements have been met in the specific cases indicated in paragraph (6) below.
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> (2) The Board emphasizes the desirability of meeting the nutritional needs of the people by the use of natural foods as far as practicable, and to that end encourages education in the proper choice and preparation of foods and the betterment of food production, processing, storage, and distribution so as to provide more fully the essential nutrients native thereto.
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> (3) In order to avoid undue artificiality of food supply the Board favors, whenever practicable, the choice, as vehicles for the distribution of additional nutrients, of those foods which have suffered loss in refining or other processing, and recommends that the nutrients added to such foods should preferably be the kinds and quantities native to the class of foods involved.
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> (4) The addition of other than natural levels of nutrients to foods which are suitable vehicles of distribution may be favored when in the judgment of the Board the addition will be advantageous to the public health and when other methods for effecting the desired purpose appear to be less feasible.
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> (5) Whenever technological and economic developments lead to extensive reduction in the consumption of a staple food, with a consequent nutritionally significant reduction in the intake of an essential nutrient or nutrients, the Board believes that consideration should be given to the desirability of restoring such nutrient or nutrients to the dietary.
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> (6) The Board reaffirms its endorsement of the enrichment of flour, bread, degerminated corn meal, and corn grits, the nutritive improvement of whole grain corn meal and of white rice, and the addition of vitamin D to milk, of vitamin A to table fats, and of iodine to table salt.

If these general principles are followed, I am sure that our present knowledge of nutrition will be used to the best advantage in providing foods with nutrients that will supply all of our needs. Members of the Food and Nutrition Board do not receive pay for their services. The expenses for attendance at meetings of members of committees of Boards of the National Research Council are paid, but they receive no further remuneration. They are truly public servants. They are usually chosen from our colleges and universities on the basis of their ability to cope with specific problems. We are fortunate in having this kind of guidance.

REFERENCE

(1) Report of the Ad Hoc Committee on Food Fortification Policy. Proc. Food & Nutrition Bd. 13: 20, 1953.

Basal Metabolism of Girls in the Great Lakes Region

Need for Continuous Promotion of Iodized Salt[1]

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RECENT reports (1–3) re-emphasize the continuing need for the use of iodized salt in goiter prevention in the Great Lakes area. Indeed, one (3) stated: "For many years it has been known that goiter, so-called simple or endemic goiter, was unusually common in Michigan, so common that people called it 'Michigan disease.'" The incidence of abnormal thyroid glands in the state's population had reached 47.2 per cent in 1924 when the Michigan Department of Health and the Michigan State Medical Society joined forces, and in a survey of four counties, examined 31,612 children. Following the inauguration of a cooperative goiter prevention program, surveys were made in the same areas in 1924, 1928, 1936, and 1951. Thirty years after the introduction of iodized salt in the retail and wholesale grocery outlets, in 1951 a survey of 53,785 school children in the same four counties showed the incidence of goiter had declined from 47.2 per cent to 1.4 per cent. The report (2) stated: "No ill effects have been noted from the use of iodized salt."

In 1934, McClure (4) studied, in seven large Michigan hospitals, the effects of generalized use of iodized salt in endemic goiter regions on thyroid surgery and reported that since its introduction in 1924, coincident with the great reduction in the number of enlarged thyroids, there had been a decline in the number of operations for hyperplasia and adenomata of the thyroid.

The survey in 1951 (3), however, indicated that on the average only 58 per cent of the salt sold in packages of 10 lb. or less is iodized. Michigan has no law requiring that salt be iodized; therefore, the choice between common and iodized forms is left to the purchaser. Moreover, it is difficult for institutions to purchase iodized salt in packages of 10 lb. or more. As a result, many are forced to use the noniodized product.

The thyroid gland plays an important role in the growth and development of children. Insufficient consumption of iodine depresses the basal heat production. The results of an investigation of the oxygen consumption of a group of apparently healthy Michigan girls five to eighteen years old, who were reared in the Great Lakes region during the progress of the goiter control program, are presented here.

EXPERIMENTAL PROCEDURE

The subjects were wards of the Methodist Children's Village in Detroit and lived in family groups of eight to ten, in modern homes in the country. Similar healthful diets and programs of living were experienced by all subjects. The girls were willing and enthusiastic participants in the study.

Throughout the observations, the subjects followed the usual preparatory regimen for basal metabolic tests; namely, a light supper the night before and no ingestion of foods or fluids thereafter until the tests were concluded the following morning. The older girls retired early, and the following morning reported to the Administration Building where a special room in quiet surroundings was equipped with curtained-off cubicles. Each girl relaxed not less than 30 min. in a comfortable bed, covered adequately for warmth, prior to the determination. With younger subjects, basal metabolic tests were made in a room prepared for the purpose in the house in which they lived. Immediately upon awakening, each little girl was carried to the bed in the room for the tests.

The Benedict-Roth closed-circuit apparatus (5)

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was used to determine oxygen consumption. In a comparative study, Lewis, Iliff, and Duval (6) found that standards for the basal metabolism of children are equally reliable with either the closed-circuit bedside method or a chamber procedure. Pulse rate was counted at the wrist for a full minute before and after each test; oral temperature and blood pressure also were recorded before and during the basal metabolic test period. Respiration rates were calculated from the kymograph tracings.

Two, and often three, 10-min. periods were recorded in each test following preliminary runs to accustom the child to the mouthpiece and nose-clip. The average of two of the best 6-min. periods which agreed within 5 per cent was taken as the basal oxygen consumption for that day. From among measurements which did not agree within 5 per cent, the lowest test was recorded. Metabolic tests were rejected when there was an elevation of temperature or pulse rate, coughing, irregular kymograph record, evidence of shivering, or emotional disturbance.

The following measurements were recorded: age, stature, weight, barometric pressure, time of day, health status, and degree of cooperation. Because of lack of agreement as to the best method of recording heat production, the data were compiled as: oxygen consumption per minute per kilogram of body weight; calories per hour per kilogram of body weight; calories per hour per centimeter of stature; calories per hour per square meter of body surface; and, total calories per 24 hr. The basal metabolic rates were calculated by the DuBois standards (7) as modified by Boothby and Sandiford (8).

RESULTS

The averages, minima, and maxima for oxygen consumption and basal heat production presented in Table 1 represent 710 observations for 67 individual girls at the different age levels. The numbers of determinations on the same individual ranged from 1 to 62. The data have added value in that the children were exposed to the same environment, to the same dietaries, and were trained in performance as subjects of physiologic investigations. For these reasons, the individual variability and fluctuations of the metabolic values among individuals of the same age should be minimal. The tests were made at approximately the same time in the day; therefore, the intra-daily variability also should be small. Table 2 gives the ranges of average body temperature, respiration, pulse rate, and blood pressure.

The percentage frequency distribution of 710 basal metabolic rate determinations for 67 girls, 5 to 18 years old, is shown in Figure 1. The highest percentage of girls (25 to 30 per cent) had basal metabolic rates within the range of 0 to −5 per cent. This tendency toward low basal metabolic rates might be expected in goiterous regions where iodized salt may be available, although not always used.

Investigators have recommended various means of interpreting heat production in relation to physical characteristics. Some have favored interpretation of results on the basis of age and stature; others include weight; and still others use a combination of stature and weight, such as surface area. In Table 1 the median, minimum, and maximum values for basal heat production are referred to age in units of body weight, stature, and surface area. Irregularities observed in age groups under nine years were probably influenced by small numbers of subjects.

When calories per hour per square meter of surface area are referred to age, the average results of this study of Michigan girls portray a downward trend with progressive age. The average levels of results, however, are higher when compared with the standards of Lewis *et al.* (9–11) for basal heat production of girls two to fifteen years old, inclusive. Similarly, when calories per hour are referred to weight in kilograms, to stature in centimeters, and to surface area in square meters, respectively, the average trends of the Michigan girls were upward. While the results have a tendency to be higher than those of the Colorado study, they are similar to the observations of Boothby, Berkson, and Dunn (12) in Minnesota. Neither altitude nor method used is likely to account for higher values, for elevations below 9000 ft. do not influence the basal metabolism of children (13) or women (14), and the closed-circuit bedside method is equally as reliable as the chamber procedure (6).

The prepubertal, pubertal, and adolescent epochs of a girl's life are characterized by extensive physiologic readjustments, accompanied by varying rates of physical growth and sexual maturation. The individual differences in physiologic performance may be illustrated by determinations of basal metabolism obtained in the post-absorptive resting organism at successive intervals during the subject's progress in biologic time. Any physiologic stress or nutritive strain which accelerates or reduces basal heat production alters the basal metabolic rate in proportion to the intensity. Some of the girls passed the menarche while under observation.

The results in Table 1 demonstrate the variability in basal heat production among girls of similar age and body size. The subjects of this study tended to have relatively heavier body weights for age than the standards of Lewis *et al.* (11). The difference in body size may in part account for some of the discrepancies between the results obtained in Michigan and those observed in Colorado.

Comprehensive reviews and studies on variation in heat production of girls, with age, during childhood and adolescence have been presented (9, 15–20). The numbers of subjects observed in various localities, however, remain small inasmuch as there are relatively large variations among individuals at different stages of growth and development and in

TABLE 1

Basal metabolism referred to age for 67 girls five to eighteen years old

AGE OF SUBJECTS	NUMBER OF SUBJECTS	NUMBER OF DETERMINATIONS	MINIMUM	MEDIAN	MAXIMUM
Stature					
yr.			*cm.*	*cm.*	*cm.*
5	3	30	102	108	122
6	3	51	111	117	121
9	3	7	129	129	148
10	4	13	140	145	149
11	4	32	140	147	151
12	7	45	145	155	162
13	15	85	147	158	168
14	20	117	149	163	169
15	25	124	154	162	176
16	18	120	150	162	169
17	8	80	154	159	165
18	4	152	6	159	163
Weight					
			kg.	*kg.*	*kg.*
5	3	30	16	18	24
6	3	51	19	21	24
9	3	7	26	30	50
10	4	13	33	35	42
11	4	32	33	35	48
12	7	45	33	41	54
13	15	85	39	49	75
14	20	117	37	56	78
15	25	124	46	59	73
16	18	120	48	57	65
17	8	80	43	58	67
18	4	6	46	52	61
Surface Area					
			sq.m.	*sq.m.*	*sq.m.*
5	3	30	0.67	0.74	0.90
6	3	51	0.77	0.84	0.90
9	3	7	0.97	1.04	1.39
10	4	13	1.14	1.24	1.29
11	4	32	1.16	1.21	1.38
12	7	45	1.21	1.34	1.55
13	15	85	1.26	1.47	1.73
14	20	117	1.26	1.56	1.84
15	25	124	1.43	1.60	1.86
16	18	120	1.44	1.58	1.73
17	8	80	1.36	1.56	1.71
18	4	6	1.39	1.52	1 62
Oxygen Consumption*					
			cc./min.	*cc./min.*	*cc./min.*
5	3	30	118	127	150
6	3	51	110	135	169
9	3	7	179	192	214
10	4	13	173	201	226
11	4	32	163	186	227
12	7	45	166	202	238
13	15	85	173	208	239
14	20	117	135	214	259
15	25	124	176	213	260
16	18	120	157	201	256
17	8	80	166	196	233
18	4	6	176	190	216
			cc./min./sq.m.	*cc./min./sq.m.*	*cc./min./sq.m.*
5	3	30	156	173	201
6	3	51	128	160	194
9	3	7	146	180	208
10	4	13	138	162	183
11	4	32	134	154	178
12	7	45	114	149	190
13	15	85	117	142	180
14	20	117	107	135	166
15	25	124	107	135	162
16	18	120	107	128	169
17	8	80	107	124	152
18	4	6	117	128	135

* Converted from calories according to average respiratory quotients given by Lewis *et al.* (9) for girls five to thirteen years old; 0.860 was used for the older girls.

TABLE 1—*Continued*

AGE OF SUBJECTS	NUMBER OF SUBJECTS	NUMBER OF DETERMINATIONS	MINIMUM	MEDIAN	MAXIMUM
Heat Production					
yr.			*cal./24 hr.*	*cal./24 hr.*	*cal./24 hr.*
5	3	30	820	877	1039
6	3	51	760	933	1169
9	3	7	1240	1325	1479
10	4	13	1200	1395	1569
11	4	32	1140	1305	1589
12	7	45	1150	1398	1649
13	15	85	1200	1449	1659
14	20	117	940	1488	1799
15	25	124	1220	1478	1809
16	18	120	1090	1400	1779
17	8	80	1150	1364	1619
18	4	6	1220	1320	1499
			cal./hr./sq.m.	*cal./hr./sq.m.*	*cal./hr./sq.m*
5	3	30	45	50	58
6	3	51	37	46	56
9	3	7	42	52	60
10	4	13	40	47	53
11	4	32	39	45	52
12	7	45	33	43	55
13	15	85	34	41	52
14	20	117	31	39	48
15	25	124	31	39	47
16	18	120	31	37	49
17	8	80	31	36	44
18	4	6	34	37	39
			cal./hr./kg.	*cal./hr./kg.*	*cal./hr./kg.*
5	3	30	1.7	2.0	2.4
6	3	51	1.4	1.8	2.2
9	3	7	1.1	1.8	2.3
10	4	13	1.3	1.6	1.8
11	4	32	1.2	1.5	1.9
12	7	45	0.9	1.4	2.0
13	15	85	0.8	1.2	1.7
14	20	117	0.9	1.1	1.5
15	25	124	0.8	1.0	1.4
16	18	120	0.8	1.0	1.6
17	8	80	0.8	1.0	1.3
18	4	6	0.9	1.1	1.2
			cal./hr./cm.	*cal./hr./cm.*	*cal./hr./cm.*
5	3	30	0.31	0.34	0.40
6	3	51	0.26	0.33	0.41
9	3	7	0.37	0.41	0.45
10	4	13	0.33	0.40	0.46
11	4	32	0.32	0.37	0.46
12	7	45	0.32	0.38	0.46
13	15	85	0.31	0.38	0.45
14	20	117	0.26	0.38	0.46
15	25	124	0.32	0.38	0.46
16	18	120	0.29	0.36	0.46
17	8	80	0.29	0.36	0.42
18	4	6	0.32	0.34	0.40
Basal Metabolic Rate					
			%	%	%
5	3	30	−9	−1	13
6	3	51	−23	−7	11
9	3	7	−15	11	26
10	4	13	−11	4	16
11	4	32	−10	2	16
12	7	45	−22	0	29
13	15	85	−17	−2	23
14	20	117	−24	−0.3	19
15	25	124	−19	−0.1	20
16	18	120	−15	−2	27
17	8	80	−17	−3	15
18	4	6	−9	0	4

different environments. In a discussion of the basal metabolism of girls, Talbot, Wilson, and Worcester (17) stated: "We also believe that because of the number of factors involved, the subject of basal metabolism must be approached by repeated observations on the individual child and not by single

TABLE 2

Average body temperature, respiration rate, pulse rate, and blood pressure of 67 girls

MEASUREMENT	ORAL BODY TEMPERATURE	RESPIRATION RATE PER MINUTE	WRIST PULSE RATE PER MINUTE	BLOOD PRESSURE	
				Systolic	Diastolic
	°F.				
Minimum	97.0	8	48	70	40
Maximum	99.6	32	118	116	88
Maximum individual variation	1.7	19	43	26	32

observations on many subjects." The truth of this statement has been attested by other investigators (9, 18). Indeed, repeated measurements of groups of individuals have been found to determine growth trends more reliably than will many times as many cross-sectional measurements (21).

SUMMARY

A total of 710 determinations of basal heat production were made with 67 girls 5 to 18 years old while they were living in a children's institution. The number of determinations for individual subjects ranged from 1 to 62. The highest percentage of subjects (25 to 30 per cent) had basal metabolic rates in the range of 0 to −5 per cent.

The girls lived in the Great Lakes region where goiter is endemic and were exposed to similar physical environment, diets, and activities. Iodized salt may not always be purchased and used in institutions. The tendency of actively-growing girls in a goiter region to have lowered basal metabolic rates in spite of an active goiter prevention program emphasizes the need for continuous educational campaigns to re-emphasize and reiterate to the food shopper the importance of choosing from the grocery shelf iodized salt for family use and to urge that iodized salt be made available in institution-sized packages for hospitals and children's homes.

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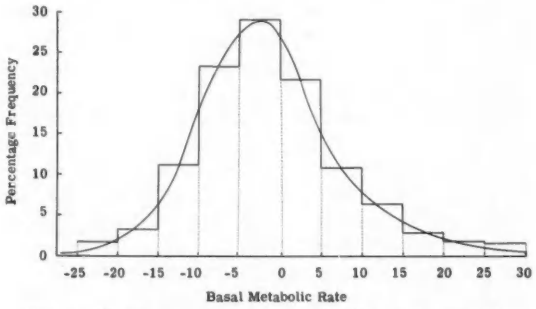

FIG. 1. *Frequency distribution of 710 basal metabolism determinations with 67 children.*

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Assessment of Dietary Study Methods

I. Comparison of Methods for Obtaining Data for Clinical Work[1]

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THIS study was undertaken to provide more factual evidence on: (a) the variations in the estimate of dietary intakes which arise from the use of different techniques in clinical studies; (b) the number of days for which dietary records should be maintained; and (c) the size of samples which are suitable for comparison.

A variety of methods to obtain dietary data for research purposes exist. It is of interest to know if the intakes obtained by different methods provide information of sufficient similarity that data can be compared. It would also be of interest to know if data collected by more than one method could be pooled.

The technique employed limits the selection of the sample. Obviously all persons are not suitable subjects for a single technique. For example, not all are appropriate for the long interview to determine usual food practices. It is equally apparent that all persons will not keep seven-day records or weigh their food. Thus, if different methods could show a high degree of correlation and the data could be pooled, it would help eliminate the bias necessarily caused when the sample depends on the suitability of the subjects to a selected technique.

A study was undertaken to find similarities and differences in results of different methods. The following methods were used in this study: Method I, the seven-day dietary record kept by the subject; Method II, usual food patterns derived from a detailed interview with the patient; Method III, three or more "recalls" of food eaten during the previous 24 hr. With Method I, the patients were taught to record the food eaten in terms of household measurements. They were asked to record in detail how food money was used. Method II was based on the work of Burke (1). In this method the interviewer attempts to learn the child's usual eating practices. This was cross-checked with the family food purchases and food practices of other members of the family. With Method III, the 24-hr. recall was an hour-by-hour account of the patient's entire activity for the day. In this way the total food intake was brought out along with his other activities. Three or more 24-hr. recalls were required.

The methods were chosen because they are practical procedures which can be used by most outpatient departments. As far as possible, all three methods were to be used on each patient. Only children and young adolescents were used in this study.

The patients investigated for this study were attending two clinics in Chicago for rheumatic fever, the Bridgeport Clinic and the Cook County Cardiac Clinic. Both clinics were under the supervision of the Rheumatic Fever Research Institute of Northwestern University Medical School. The dietary data were obtained in 1949 and 1950 while the author was serving as Research Nutritionist at the Institute.

A total of 214 patients was seen by the nutritionist in the two clinics. Collection of data according to Methods I, II and III is shown in Table 1.

Information regarding family history, housing, and other data pertinent to rheumatic fever was collected. This paper will be limited to the study of methods of obtaining dietary information.

METHODS OF ANALYSIS

The dietary data were tabulated by the method used by Trulson and co-workers (2) based upon the work of Caso and Stare (3) and Donelson and Leichsenring (4). The food was recorded in groups. Cal-

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TABLE 1

Number of records obtained

METHOD*	NUMBER OF SUBJECTS
I, II, III	47
I, II	13
I, III	19
II, III	25
I	18
II	25
III	16
Incomplete data†	51
Total	214

* Method I = seven-day record; Method II = interview to learn "usual" food intake," and Method III = 24-hr. recall.

† Less than three 24-hr. recalls, or incomplete seven-day records, or incomplete dietary histories.

culations were done for protein, animal protein, and vitamin A including carotene.

The food was tallied in the following food groups and nutrients: milk, eggs, meat, liver, animal protein, enriched bread, cake, candy bars, legumes, potato, non-animal protein, total grams protein, foods high in carotene, foods high in ascorbic acid, and other fruits and vegetables. Information such as the use of coffee and tea, soft drinks, and vitamin medications was also recorded.

The data were compiled into groups of foods which contributed greatly to a specific nutrient and also total specific nutrients so that both could be considered in showing variation by method. The foods "high" in ascorbic acid varied from 34 mg. ascorbic acid to 74 mg. The size of servings were taken into consideration as well as the eating pattern of the community. The same was true of the foods "high" in carotene, the amount varying from 2,500 to 12,000 I.U. expressed as vitamin A. The other data under consideration were those of Huenemann and Turner (5) which were expressed in nutrients. Milk included foods made with milk, such as soups, ice cream, and milk in prepared dishes; cheese was converted into its milk equivalent.

The degree of relationship between the methods was tested on those who participated in all three methods of collection. To find the relationship, the correlation coefficient was determined by the methods of Hill (6). The data were grouped and plotted to show the scatter pattern. Critical ratios of the correlations were done by the formula: $\text{C.R.} = \frac{r}{\frac{1}{N-1}}$. The difference in means for protein, milk, eggs, and foods high in carotene and ascorbic acid were tested by the formula:

$$\text{C.R.} = \frac{\text{Mean 1} - \text{Mean 2}}{\sqrt{\frac{(SD_1)^2 + (SD_2)^2 - 2r(SD_1)(SD_2)}{N}}}$$

Dietary data were obtained from 47 patients by each method; 37 were between ages 7 and 12, 7 were 13 years or over, and 3 were under 6 years old. The 37 patients between the ages of 7 and 12 were selected for further study. Table 2 shows the comparison of the mean intake of milk, protein, eggs, foods high in carotene and foods high in ascorbic acid. Milk was averaged for the number of cups per day and protein for number of grams per day. The tabulation for eggs was based upon number of eggs per week, including those used in combination dishes, and foods high in carotene and foods high in ascorbic acid were averaged for weekly servings.

The highest mean value for milk was obtained by Method II, the interview; Method III, the average of three or more 24-hr. recalls provided the lowest mean value. The differences between Methods I and II and between II and III were positive. The differences between Methods I and III were not positive. The correlation coefficients were significant in each instance.

The mean protein intakes for Methods I and II were approximately the same, while the mean value for Method III was the lowest. The differences between Methods I and II and II and III were negative and that between I and III were slightly positive. The correlation coefficients in all cases were significant.

The mean intake of eggs ranged between three and three and one-half eggs per week. The variations in egg consumption were great as shown by the coefficients of variation. The greatest difference in egg intake according to the method used approximated two-thirds of an egg per week. Only the correlation coefficient obtained by Methods I and II was significant.

The average intake of foods high in carotene was highest when obtained by the seven-day dietary record (Method I); Method III produced the lowest figure. Differences approximating one serving of these foods weekly were found between Method I and the other two. There was a positive difference between Methods I and II. Comparison of Methods I and III and of Methods II and III were negative. Methods I and II showed significant correlation; this was not found by correlation of Methods I and III.

The average consumption of foods high in ascorbic acid, as obtained by the three methods, ranged from four and one-half servings to almost six servings per week. As with foods which supply high amounts of carotene, the seven-day dietary record provided the highest mean intake of foods that were important sources of ascorbic acid. Method III provided the lowest mean values. The standard deviation for Method III was the largest. The differences between Methods I and II and I and III were positive; that between II and III was negative.

Since this study provided no comparison of weighed diet with other methods, a study in the

literature by Huenemann and Turner (5) was scrutinized, wherein weighed diets had been compared with an interview. Twenty-five children were studied. Each patient was questioned regarding usual intake, his previous day's intake, and the frequency with which foods were eaten. In addition, the family food purchases and the distribution of food among the members of the family were determined. After the interview the patient was taught to weigh his food for a period of ten to fourteen days for four periods

TABLE 2

Comparison of dietary data obtained by three methods†

CALCULATION	METHOD			COMPARISON		
	I	II	III	I vs. II	I vs. III	II vs. III
Milk Intake						
Mean intake (cups/day)	3.02	3.52	2.83			
Standard deviation	1.32	1.39	1.07			
Coefficient of variation	43.7%	39.4%	37.8%			
Difference of means				0.50	0.19	0.69
Standard error of difference				0.18	0.15	0.20
Critical ratio				2.69*	1.24	3.37*
Correlation coefficient				0.65	0.71	0.51
Critical ratio of correlation coefficient				3.95*	4.31*	3.10*
Protein Intake						
Mean intake (gm./day)	65.20	65.74	61.80			
Standard deviation	14.75	15.45	13.55			
Coefficient of variation	22.6%	23.5%	21.9%			
Difference of means				0.54	3.40	3.94
Standard error of difference				2.02	2.23	1.95
Critical ratio				0.27	1.52	2.02
Correlation coefficient				0.67	0.54	0.67
Critical ratio of correlation coefficient				4.07*	3.28*	4.07*
Intake of Eggs						
Mean intake (servings/week)	3.45	3.39	3.07			
Standard deviation	2.62	2.85	2.93			
Coefficient of variation	75.9%	84.0%	95.4%			
Difference of means				0.06	0.38	0.32
Standard error of difference				0.46	0.50	0.56
Critical ratio				0.13	0.75	0.57
Correlation coefficient				0.46	0.38	0.30
Critical ratio of correlation coefficient				2.79*	2.33	1.88
Intake of Foods High in Carotene						
Mean intake (servings/week)	5.31	4.12	5.01			
Standard deviation	3.11	2.45	3.48			
Coefficient of variation	58.5%	59.4%	69.4%			
Difference of means				1.19	0.30	0.89
Standard error of difference				0.47	0.63	0.68
Critical ratio				2.48	0.47	1.30
Correlation coefficient				0.47	0.32	0.26
Critical ratio of correlation coefficient				2.86*	1.92	1.58
Intake of Foods High in Ascorbic Acid						
Mean intake (servings/week)	5.85	4.91	4.42			
Standard deviation	2.91	2.69	4.17			
Coefficient of variation	49.7%	54.7%	94.3%			
Difference of means				0.94	1.43	0.49
Standard error of difference				0.44	0.65	0.61
Critical ratio				2.14	2.20	0.79
Correlation coefficient				0.54	0.41	0.46
Critical ratio of correlation coefficient				3.31*	2.49	2.84*

* Significant critical ratios

† Method I—seven-day record; Method II—interview to learn "usual" food intake; Method III—24-hr. recall.

every three or four months. Three or four periods of weighed food intake were obtained.

Each diet was calculated in terms of the average daily intake of calories, protein, calcium, phosphorus, iron, vitamin A, riboflavin, carbohydrate, and fat. When the calculations obtained by dietary history were compared with the weighed dietary records, the authors found that no dietary history agreed with the weighed dietary record within 20 per cent for all nutrients. Eighteen of the twenty-five subjects were between the ages of seven and twelve, the ages of the rheumatic fever subjects in this study. The data from Huenemann and Turner (5) have been further studied for comparisons of protein, calories, vitamin A, and ascorbic acid.

The mean protein intake was slightly higher when obtained by history than by weighing (Table 3). The differences expected could be as high as 8.6 gm. or as low as 4.2 gm. The correlation coefficients decreased as the length in time prior to the interview increased. When correlation coefficients were done on the three weighed dietary periods, they were all found to be significant. The caloric intake was also slightly higher when obtained by history than by weighing; the same patterns of correlation coefficients were observed.

From these data the investigator was first impressed with the similarity of means, and second with reduction of correlation as the length of time elapsing between food intake and interview increased. The interviewer may be determining the current eating practices and not usual eating practices. In comparing the weighed records, the correlations were all high at the different time intervals. There appears to be consistency in protein intake within the individual child. Either he records about the same weight each time or he actually is eating alike as far as protein and calories are concerned.

TABLE 3

Caloric intake of eighteen children shown by dietary histories and weighed dietary records†

CALCULATION	PRELIMINARY HISTORY	FIRST DIETARY RECORD	SECOND DIETARY RECORD	THIRD DIETARY RECORD	COMPARISON					
					Preliminary history vs. 1st record	Preliminary history vs. 2nd record	Preliminary history vs. 3rd record	1st record vs. 2nd record	1st record vs. 3rd record	2nd record vs. 3rd record
Protein Intake										
Mean intake (gm./day)	68.61	66.38	65.00	67.22						
Standard deviation	10.75	9.80	10.70	10.35						
Critical ratio					1.08	1.40	0.50	0.89	0.47	1.68
Difference of means					2.22	3.61	1.38	1.38	0.83	2.22
Standard error of difference					2.05	2.57	2.75	1.56	1.77	1.32
Correlation coefficient					0.64*	0.48	0.39	0.79*	0.72*	0.86
Caloric Intake										
Mean intake	2187.22	1948.89	1921.78	1940.17						
Standard deviation	308.44	241.08	298.96	283.09						
Critical ratio					3.31	3.15	2.41	0.495	0.15	0.32
Difference of means					238.33	265.44	247.05	27.11	8.72	18.39
Standard error of difference					71.99	84.19	102.60	54.81	57.79	57.28
Correlation coefficient					0.44	0.35	0.02	0.67*	0.60*	0.67*
Vitamin A Intake (Including Carotene)										
Mean intake (I.U.)	5166	5305	5555	6555						
Standard deviation	3570	5110	3880	6280						
Critical ratio					0.15	0.39	0.86	0.16	0.96	0.53
Difference of means					138.9	388.9	1388.9	250	1250	1000
Standard error of difference					920	985	1600	1540	1300	1870
Correlation coefficient					0.64*	0.37	0.14	−0.04	0.55	0.18
Ascorbic Acid Intake										
Mean intake (mg.)	54.89	56.61	52.67	51.89						
Standard deviation	31.26	23.82	26.33	21.23						
Critical ratio					0.38	0.43	0.44	0.97	1.10	0.13
Difference of means					1.72	2.22	3.00	3.91	4.72	0.78
Standard error of difference					4.52	5.14	6.79	4.04	4.28	6.12
Correlation coefficient					0.79*	0.68*	0.45	0.77*	0.68*	0.42

* Significant correlations

† Taken from Huenemann and Turner (5)

The information on vitamin A was different (Table 3). The correlation coefficient from the interview and first weighed record gave a correlation of 0.64; the other correlations were not significant. In this study, it would appear that the interview again revealed present food patterns, the first weighing and interviewing had the greatest correlation. It also shows that there is no way to predict the vitamin A intake of individuals by weighed diets done at different times of the year. The differences of mean values of vitamin A were not significant.

The means of the ascorbic acid intake (Table 3) were quite similar, and there were no statistically significant differences in the mean values. It was of interest to note that the correlation coefficients of the weighed records with the first dietary history decreased as the time between interview and weighing period increased.

From the data acquired from the study of rheumatic fever and those borrowed from the study of Huenemann and Turner (5), it has been shown that mean intake of some foods and nutrients may be similar when acquired by different methods while data on other foods and nutrients may show significant differences. These differences in methods did not always follow the same trend. From the data obtained from the rheumatic fever patients, the seven-day record and the interview to learn long-range food practices seemed to give more similar results than the three or more one-day dietary records. The data of Huenemann and Turner (5) suggest that the interviewer was obtaining data on current food practices, for the correlation coefficients tended to fall as the time between the interview and weighing practices increased.

It must be accepted that it is difficult, if not impossible, to determine which method gives correct food intake. It must also be appreciated that an individual with no discernible pattern of eating could not be a suitable subject regardless of the method selected. From the observations in the author's study, it is her opinion that Method II, the long-range interview of usual food practices which will reveal previous as well as present eating patterns, is the method of choice in clinical studies. If this is impossible, the seven-day dietary record (Method I) seems next preferable.

Whenever possible only one method should be used, but in situations where more than one method is used or where a different method should be employed in a survey of the same population, adjustments must be made or recognition of the differences in methods must be made so that the results will not be distorted.

CONCLUSIONS

Data from thirty-seven patients who had submitted dietary data by three methods—seven-day record, dietary interview of usual food practices, and three or more 24-hr. recalls—were compared. The means were compared and correlation coefficients determined for protein, milk, eggs, foods high in carotene, and foods high in ascorbic acid.

The seven-day record and the interview of usual food practices gave more similar information as evidenced by correlation coefficients.

The ability to estimate or predict intake of an individual based on knowledge of intake by one method varied with the food or nutrient.

The differences in mean values of the foods and nutrients obtained by three methods were not consistent. This was also observed when weighed diets and interview were compared.

For practical purposes, one method should be used in the collection of data for any particular study. When this is impossible and a second method is used, correction factors should be employed when differences occur.

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Perhaps we need to evaluate not only our food production but its use in terms of nutritional efficiency if we are to realize maximum nutrition at minimum cost and effort. In discussing this problem in the *Journal of Agricultural and Food Chemistry*, M. E. Parker of the Illinois Institute of Technology points out that retail food protein prices range from about $1 a pound in the form of nonfat dry milk solids to as high as $5.50 per pound for pork chop protein—and even higher for other types. He suggests that protein prices be quoted in the food markets, and that when this happens, most of our surplus food problems will rapidly disappear. The dairy industry is already wrestling with the problem of tieing product evaluations to a protein base.

Ingredients for Good Personnel Relations[1]

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A PERSONNEL man has been defined as one who is perched on the fence between management and labor; who spends most of his time dreaming up complex employee-employer problems; and who then does his best to make these problems become realities. Actually, we who are employed in personnel relations can't lay claim to any such responsible position. In fact, the term "personnel management" is a misnomer, because our function is not managerial or supervisory, but advisory. You, who have first line supervisory responsibilities, are the real personnel managers and personnel supervisors.

A second misnomer is the term "personnel relations," which is symptomatic of many of our labor-management problems today. When we speak of personnel relations, we immediately think of group relationships. The individual, therefore, loses his identity and becomes lost in the group. All of us are afraid of losing our identity, and we rebel whenever our identity is in jeopardy. We don't want to be treated categorically, we want to be treated individually. There is no such thing as a personnel problem. They are personal problems.

We, at the Battelle Institute, strongly believe in the importance of the individual and individual relationships. Our formal rules and regulations are kept to the bare minimum, and our personnel policies are sufficiently flexible to allow for individual differences. The academic and social backgrounds of our staff are quite varied. We employ engineers and technologists with bachelor's, master's, and doctor's degrees; skilled and semi-skilled technicians; machinists and mechanics; typists, stenographers, and other office personnel; accountants; editors; artists and draftsmen; cafeteria workers; janitors; and so on. Although our staff composition is quite varied, ranging from professional to unskilled, the same rules and regulations—or maybe I should say, the same lack of rules and regulations—still hold true. Why? Because we believe that all people have the same basic desires and are sparked by the same motives. Their differences are in matters of degree only. All want the freedom of opportunity, employment security, job satisfaction, good working conditions, pleasant associations, a feeling of belonging, the freedom from want for themselves and their families, and the opportunity for individual expression and individual recognition.

However, the order of importance of these basic desires to us as individuals varies according to our individual circumstances. The complexity of personal problems stems from this variability.

As I understand it, dietitians are concerned with the employment and supervision of similar types of personnel, such as cooks and general kitchen help, counter girls, tray girls, dishwashers, and so on. Most of the people whom you employ have very limited, or meager educations, and their economic status is on a hand-to-mouth basis. You are handicapped by definite budget limitations and find it very difficult to meet the competition of industry for good employees, especially during times of peak employment. You are concerned with the problems of recruiting and selection, training, employee reliability, absenteeism, and turnover.

I certainly do not have any pat solution to any of these problems, but I hope that I may be able to give you some ideas on how to meet these problems.

FINDING CAUSES AND CORRECTING SITUATIONS

All of us are inclined to be too subjective in our consideration of problems, especially personnel problems. We become too wrapped up with the "what" of the problem, rather than the "why." "What" is symptomatic; it is the effect. "Why" is the cause. When a person is unexplainedly absent from work, we become much more concerned with what he has done, than why. But a problem can never be solved by "what"; it can only be solved by "why."

It is important, therefore, that we make every attempt to determine the cause of any employee's

[1] Presented before the Ohio Dietetic Association in Columbus, on April 9, 1954.

wrong doing before taking disciplinary action. This, of course, is much easier said than done. In fact, if you ask the employee why, his stated reason will probably be quite different from his real reason. This doesn't mean that he is necessarily trying to lie his way out of his situation; he may not actually understand the real reason himself. Or, he is so subjective in his thinking, that he rationalizes his actions to the point where he really believes his stated reason.

How are you going to ferret out the real reason? Before calling the person in for questioning and possible disciplinary action, review in your mind what has gone on before with respect to this person and his employment record. Try to think of the various happenings or circumstances that might possibly account for his actions. Review his employment record. Has he been a good employee and is this a first offense, or has his record been consistently marginal, or below par, and is he a consistent offender? Get all the facts that you can before the interview and weigh them as objectively as possible. Determine in advance what courses of action are available and what types of disciplinary action may be in order. Is the offense serious enough to justify dismissal? Should his pay be docked? If he is a salaried employee, should he be changed over to a straight hourly rate? Or, should he simply be given a warning?

After you have thought these things through, bring the person in for discussion. Make certain that your discussion is held in privacy and is conducted in a firm, but unemotional manner. Be as objective as possible during the interview and let him talk as freely as possible. Avoid asking leading questions which may help to give him an "out," but *get him to talk*. Listen intently for any remarks during his explanation which might hint at the underlying cause. Channel his discussion for a more complete explanation of any such remarks. A good way to do this is to repeat what he has said, such as, "So you don't think the automatic dishwasher operates the way it should." Led on in this way, the employee may eventually disclose the real reason for his action, such as, "Well, no one has ever complimented me on my work and the other day someone complained about a dirty dish. Besides it was raining yesterday and I didn't feel so well, and I just decided not to come to work."

When you are satisfied that you have sufficient information, make your decision and convey it to the employee as soon as possible. Preferably do it immediately during the interview. If for some reason you need to defer final action, tell him when he will receive your decision, and do it with as little delay as possible. After you have given him your decision, end the discussion in a reasonably friendly manner and let him know definitely what you expect of him in the future.

Follow-up your discussion after a short interval—as soon as you have been able to determine if he is making progress and if he is making a conscientous effort to correct his wrong doing. This follow-up can be very brief and at his work place. Compliment him on the effort he has made or on some other commendable achievement. Let him know that you recognize the good as well as the bad and that you have confidence in him.

RECRUITING EMPLOYEES

Good recruiting and selection methods are basic to successful employee relations. Every effort should be made to select the right person for the right job. It is just as important to make certain that a candidate is not over-qualified for a job as it is that he has at least the minimum qualifications. The end result will be the same, namely, dismissal or resignation. In considering a person for a given job, there are certain primary factors which are important to job success: (a) the individual's level of education and mentality, (b) his skills and experience, (c) his job interests and employment motives or goals, and (d) his physical condition and personality adjustment.

If you hire a person with too high a level of education or mentality for routine or menial work, the job will not hold his interest and he will either quit shortly or his performance will be unsatisfactory. By the same token, if a person possesses certain skills, such as those of an experienced cook, and you can only use the person in an unskilled capacity, you are courting job dissatisfaction at the outset. If the candidate has done work similar to that for which you are considering him, find out what he liked and what he disliked about it. Why did he leave the other jobs? If, for example, he left the other jobs for higher pay and you can't offer him more than he was making before, is there any reason to believe that he won't be just as unhappy in your employ at the same rate of pay?

Job or vocational interests for unskilled personnel are usually quite nebulous. At least we don't usually think of a person as seeking, for example, a janitorial career. Nevertheless, we know that people generally do better work if they are doing what they like to do. It is important, therefore, that we try to place people in work which appeals to them in terms of their duties, responsibilities, and possible job accomplishments. Everyone wants to feel that his job is important. He wants to feel pride in his accomplishments and to feel that others respect his job status and accomplishments.

As a part of your job analysis of the qualifications needed for a given job, don't overlook taking inventory of the minimum physical qualifications necessary. During your employment interview try to ascertain as well as you can whether the person meets these minimum qualifications. If you give pre-employment physical examinations routinely, they will

usually disclose any physical handicaps or limitations which may not be apparent during the interview.

As you probably know, physically handicapped workers in many cases prove to be excellent workers and much more reliable than those without such handicaps. This is true, as long as the handicap does not actually conflict with the physical job requirements. I am not referring just to those with major handicaps such as the blind, the deaf, and amputees, but also to those who may have arrested tuberculosis, hypertension, certain heart conditions, and the like. Such people are often more reliable and will have less absenteeism due to illness than others who are apparently in good health. They know their limitations and will keep themselves under medical supervision, thereby forestalling illnesses that might otherwise keep them away from the job. Don't set your physical standards too high, or you may pass up candidates who would be good, reliable employees.

There can be, of course, a definite tie in between physical and mental health, and it is always possible that physical handicaps will carry over to become mental handicaps. Such mental handicaps will prove to be much more serious from a job performance standpoint than the physical handicap itself. When you are interviewing a person with a physical handicap, discuss the handicap with him openly. What are his reactions to your questions? Does he answer your questions frankly, or does he shy away from such discussion? Does he have a good outlook with respect to his handicap, and does he exhibit the necessary confidence to compensate for the handicap?

ORIENTATION

The initial indoctrination and orientation into any job is very important to the success or failure of the job relationship. The time to be spent in this orientation procedure varies, depending on the complexity of the job and the organization. The immediate supervisor should spend as much time as necessary to: explain the job duties and responsibilities; show the new employee the various facilities available for his use; explain the organizational policies, rules, and regulations; and explain the organizational set-up to him, its history, accomplishments, and reason for existence. By doing these things, the supervisor helps the new employee feel a sense of security and belonging, and he will begin to feel pride in his organization and in his job. When a supervisor tells an employee what to do, he should also tell him why. If, for example, you tell him *what* foods are to be placed on different dietary trays, the actions of filling the trays are likely to him to be meaningless and repetitious. But if he can be told *why* this diet is important so that he can visualize how he is aiding others to regain good health, his work becomes purposeful and he will take pride in it.

One of the major reasons given for labor unrest is that the average factory worker no longer gets the same feeling of job satisfaction that his forefathers enjoyed. With the advent of the industrial revolution, the average worker lost his place in the sun as a craftsman, and with it he lost his feeling of job accomplishment. This same feeling exists with all types of laboring and unskilled personnel, unless they can be made to feel that their work is important and unless they can visualize and appreciate what relationship their particular jobs have to the entire organizational activity. This is true whether a person is employed in a large factory, a hospital, a cafeteria, restaurant, or any other type of organization.

PERSONALITY ADJUSTMENT IN EMPLOYEES

Satisfactory personal integration, or personality adjustment, is, of course, extremely important to everyone's job success. There are very few places in our employment society today where the non-conformist or the poorly adjusted individual can fit in satisfactorily. Good teamwork is highly important to the success of any organization, whether it is an assembly plant, research laboratory, hospital, restaurant, school, or business office. At Battelle, we have always placed great emphasis on the importance of teamwork, and we believe it is the basic reason for our success.

So many stories have been told and cartoons have been drawn about the eccentric inventor and long-haired scientist that many people envision this type of person when they think about research and scientific activities. Such people are certainly the exceptions in our present-day complex and interdependent research society, and they hinder rather than help organized research programs. In our experience, we have found that most of our unsatisfactory employees, even among our engineers and scientists, have been unsatisfactory because of personality shortcomings rather than technical limitations.

We, therefore, stress personality aspects in our pre-employment interviews. We are concerned with the individual's home and family background. Has he grown up in an environment that was conducive to good personality adjustment? Does he look back on his childhood as being a happy or unhappy experience? Does he have dependents, and does he show a willingness to accept this responsibility for others? Has he participated in school, church, community, or other social activities, or has he shied away from group associations and relationships? These questions are some of the keys which will help you to appraise satisfactory personality adjustment.

POSITIVE LEADERSHIP

The need for positive leadership as opposed to negative supervision cannot be overemphasized. Positive leadership creates a feeling of well-being among employees and fosters a high *esprit de corps*. Negative supervision, on the other hand, breeds a

feeling of insecurity and resultant low morale. Positive leadership includes many things, both tangible and intangible. It is shown by a smile instead of a frown; an interest, instead of a disinterest in the employee's personal and family life; a sincere display of interest in the individual's job problems and job satisfaction; a willingness to listen to grievances with an open mind and to correct inequities if the grievances are valid. It means giving credit where credit is due; allowing the employee to know your appraisal of his job performance. Compliment him when he does his job well, and when he does not, tell him what he needs to do to perform satisfactorily and to progress.

Don't put off making decisions, even if you have made wrong decisions in the past. A wrong decision in many cases is less harmful than no decision. Indecisiveness creates a definite feeling of individual or group insecurity.

The proper communication of information to employees on all things that affect them and their jobs is very important, since all of us have a much greater fear of the unknown than of the known.

Wherever possible, enlist your employees' aid in solving job problems that affect them. Encourage suggestions on how they may be able to improve their job effectiveness. If their ideas do not have merit or are not feasible, explain why things cannot be done their way in such a manner that the rejection will not discourage them from making further suggestions in the future.

If you are going to initiate a new procedure, change working operations, or reshuffle duties, even though the decision has been made, discuss the proposed change with the appropriate employees in advance and enlist their cooperation in effecting the change. You may design and develop the most efficient operation that is possible, but, unless it is supported by those who are a part of the operation, it will not be successful. On the other hand, many unwieldy operations work successfully because the participants have confidence in them and make them work.

This innovation of ideas and changes is especially important, whenever new supervisory responsibilities are assumed. As a co-worker, you may have the complete confidence and trust of your fellow workers. However, this may not be true when you assume supervisory responsibilities over them. If you try to effect changes too rapidly before you gain the confidence of your employees, they will be suspicious of your motives and reluctant to accept the changes. Passive resistance to change is just as unyielding as active resistance.

CONCLUSION

Even though you may perform all of these positive functions, follow the best personnel practices, and have the most liberal personnel policies, don't expect to eliminate all unsatisfactory performance, absenteeism, and job dissatisfaction. If you have, for example, a liberal sick leave policy, there will always be a few who will try to take undue advantage of this policy. But this does not mean that the policy is a poor one. Rather it should be appraised on the basis of the greatest good for the greatest number. At Battelle, for instance, we do not have any accrual of sick leave, and there is no set sick-leave maximum. Sick leave is granted on the basis of the individual's record and the special circumstances surrounding the case. In spite of, or maybe I should say because of this liberal interpretation, our sick-leave average is consistently lower than in industry as a whole, and we have relatively few violations of this policy.

All personnel relations and proper employer-employee relationships can be summarized in one of the simplest, yet the most complex of Christian admonitions, "Do unto others as you would have others do unto you."

Starch Sponge

Starch sponge—known a century ago and then forgotten—is getting a new lease on life. Workers at the U. S. Department of Agriculture's Northern Regional Research Laboratory have developed it for use both as a new food specialty and an absorbable surgical dressing.

To prepare the sponge, a cooked, 5 per cent paste of commercial starch—made from corn, wheat, or other source—is cooled from 28° to 3°F., thawed, and pressed to remove most of the free water. When pressure is released, the resulting sponge expands to assume the form of the mold in which it was originally cast. It can be prepared from starch alone or with the inclusion of other materials. Flavoring extracts, chocolate, soya or wheat flours, vitamin preparations, and fruit, vegetable, or meat concentrates may be added before freezing. The resulting sponges can be used as such or further treated, for example, by coating with chocolate. Thus fortified, starch sponge—a concentrated carbohydrate—also has possibilities in emergency rations.

As an absorbable surgical dressing to control bleeding, the sponge is both safe and useful, and is now in commercial production. Its outstanding advantage is that it *completely* dissolves in blood, body fluids, or tissues, and there is no need to reopen a wound or incision to remove it. Also, antibiotics or other substances can be added to the paste before it is converted to sponge form, or absorbed by the dry sponge before introduction into a wound.

Formed on a gauze backing, thin layers of the sponge can also be used for wet dressings—for example, on burns. Tissue forming around parts of the dressing don't need to be cut since the sponge is absorbed. Thus considerable pain to the patient is avoided.

Editorial

What Is Your Incentive for Effective Administration?[1]

MARGARET E. TERRELL

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Public food service today is five times greater than it was in 1930. Food served outside the home has become one of America's largest industries. According to figures given by the National Restaurant Association, it is larger than the petroleum industry which is generally regarded as one of America's richest. More money is spent in restaurants each year than for cars, both new and used.

We, as dietitians, are administrators in an industry which dollar-wise has gigantic proportions. There is another value which deserves to be put ahead of dollars, however, and that is health. Health-wise, food service is tremendously important. We know that good standards of food preparation, nutrition, and sanitation have a direct bearing on health and well being, and we regard this point as being the core of the service we have to perform.

Another significant value must also not be overlooked if we are to succeed in food service. Eating not only answers a physical necessity, but it usually possesses high enjoyment value as well. Entertainment-wise, good food has universal appeal and importance. The pleasure which is created by well prepared, beautifully served food may influence health sufficiently to deserve listing as a health factor. Certainly, it wields much influence in gaining financial success.

Health, enjoyment, and money are three major values to be guarded by all who would be successful as food administrators. In guarding them we can't "go overboard" for one and neglect either or both of the others. We must keep a happy balance. This means satisfying nutritional needs with food possessing high enjoyment value on a basis that is economically sound. This is our goal.

How can it be done? It is my belief that you and I, as administrators, need to look first of all to our incentives.

ARE YOU NEEDED?

Being needed is a strong incentive. How much does your organization need you? Would it be just as well off if you were to leave? Would it be better off if someone else were in your place? How can you make yourself indispensable to your organization? How can you be most useful as an administrator?

How can you make yourself most needed? The answer to this, of course, is by *satisfying needs.* Are you interesting and pleasing your public, planning your work, instructing your employees, informing your boss? All of these things and many more need doing.

If you are a well trained, up-and-coming, energetic dietitian, your services are greatly needed. Many positions are open for your consideration. Employers look to you to know good standards and to have ability, energy, and professional pride in maintaining them. Stolid figureheads who want routine jobs that they will fill in name only are not needed or desired.

To trained people with professional pride, the attainment of high standards is a strong incentive in itself. Standards become effective goals when they are clearly defined, but they are like will o' the wisps when they are not tied down specifically. There is a tendency to refer vaguely to good standards. What is good? The phrase, "proper sanitation," for example, may create a mental picture of a white and sterile blur. But the image becomes clearer when the standards are focused specifically on "safe food free from contamination," "glistening dishes with a low bacterial count," "careful work habits that protect sanitation of food and equipment," and "effective cleaning methods that help to keep public food service safe for patrons and employees."

ARE THERE PLANS?

Administration involves carrying out plans. This, of course, implies that there are plans. It is important that the administrator fully understand the plans and control the means, the materials, and the methods for carrying them out. Interpretation, instruction, and control are needed to focus all of the efforts within an organization toward established standards.

In the successful organization, there is certain routine work which demands well qualified thinking that an administrator must do. Menu-making is an example of such routine. But, there are also some routine tasks which are not creative, which may tie one to a desk or other areas, thus limiting decision-making and adequate instruction. Routine jobs should be handed over to someone else when they interfere with administrative effectiveness.

[1] Presented before the Washington State Dietetic Association in Pullman, on April 9, 1954.

SKILLS AND JUDGMENT

In being an effective administrator, it is my belief that knowledge is not the dietitian's greatest hazard. Each of us knows more than she uses. Certain professional and educational minimums have been set. As we use what we know and reach out mentally to find the best answers, we continue to learn. Gaining essential knowledge must be an ever-continuing process. New needs and situations arise which call for new applications. There never will be a time when one will have the answers to every problem. But, the effective administrator continues to study, to experience, and to grow in knowledge and ability to apply it.

Application is as essential to effectiveness as possession of knowledge. The administrator applies knowledge to attain specified standards through the efforts of others. Application requires effort, skill, and judgment. Ineffectiveness may result from a lack of any one of these. Effort is required to find out what is needed and what is the best method of supplying it.

Skill is needed to adjust plans to needs and conditions. Skill is required in imparting plans to others and impelling them to carry them out successfully. Skill in employment management is a vital link in producing desired results. An administrator's ability to direct others is more often the cause of poor standards than is his lack of knowledge or appreciation of good standards. Skill does not come easily, and judgment is often developed only through painful experience. In order to develop skill, one must have the courage to try when one is fearful about results. Skill comes from doing and from evaluating results and from doing again.

There are many intangibles upon which effective administration depends. Exact sciences, physical yardsticks, and dollar signs which are tangible have been pretty well defined. The intangibles are less easy to grasp or to quote. The intangibles of human relationships, for example, are not clearly described. We believe that they require intuitiveness, understanding, exercise, and high purpose to develop satisfactorily. We recognize relationships for their degree of stimulation toward good or poor results. We know that they are effective forces toward either success or failure.

The relationships of a dietitian who manages a food department are numerous and varied. There is the public to be informed so that they will have a better understanding of their own needs and better understanding and respect for the dietetic profession. There are the tradesmen who supply material and services with whom a business relationship is desired which will lead to the most suitable values. There are the patrons on whose good-will and loyalty the business depends. A loyal, cooperative relationship of teamwork among employees is essential to the production of consistently good results. Your employer grants you the privilege to serve and can give you the support and encouragement which will facilitate your success. His understanding, support, and approval of all of these people should be thoughtfully cultivated.

This is a brief enumeration of certain aspects essential to effective administration. Effort, skill, and judgment are required to satisfy nutritional needs with food possessing high enjoyment value on a basis that is economically sound. Effort, skill, and judgment will be employed if the administrator has sufficient drive. The drive or impelling force comes from incentive. What is your incentive? Evaluate the incentives which you possess—for the future of your organization, your profession, and yourself. Are they pointed toward effectiveness and satisfaction?

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The Preservation of Idiosyncrasy[1]

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Idiosyncrasy is a lovely word. It has a slight touch of the daft about it. One of its synonyms is eccentric—which conjures up a variety of interesting images. However, it also may be used interchangeably with *individuality*—and this is much the sense in which I wish to employ the word.

Implied in the term, "idiosyncrasy," is the existence of *difference*. This meaning is significant.

Among other things, we have been alerted to the need to identify, educate, and train the best minds of each student generation. *Talent*, a high order of ability, has had a great premium placed upon it as we have become a more complex technical society, as science has come to dominate our lives, and as we have come to desire a wide variety of professional services which can be provided only by those of high ability.

Talent is idiosyncrasy. It is difference with a vengeance. It is individuality to the nth degree.

I am sure that it is unnecessary for me to point out that the field of dietetics is one of the critical fields which requires a continuous and increasing supply of talent.

The question arises: how can we preserve this particular type of idiosyncrasy?

One facet of the answer is apparent. We need to be in a position to identify it—and early. I propose

[1] Excerpt from a presentation made before the joint meeting of the Kansas Dietetic Association-Kansas Home Economics Association in Topeka, March 27, 1954.

that, at a minimum, we should have a state-wide testing program in the secondary schools. I do not refer to achievement tests but to tests of general academic ability and of special aptitude. It is only on the basis of a comprehensive program such as this that we can be sure that the gifted will be recognized.

Closely related to this is the need to strengthen and extend our present program of scholarships. Sporadic local efforts are not enough. Talent is a natural resource. Let us take care of it on a systematic basis. Sound public policy would, I believe, endorse a system of state scholarships for every field of scholarly activity. Compare the magnitude of financial subsidy of athletes with general scholarship support for an example of our indifference.

Finally, I propose that the members of college-educated groups such as dietitians make an individual effort to seek out and encourage talented young people to make the fullest possible use of their gifts by obtaining the most and the highest quality education possible. This is not a proposal for a general college recruiting campaign. I am interested in selective efforts aimed at a particular form of idiosyncrasy in order to promote the general welfare.

I am convinced that the personal interest and efforts of individuals can frequently be the deciding factor in whether or not a highly qualified person "makes the most" of his or her qualifications.

Lysine Aids Growth of Infants with Poor Appetite

The rate of growth of infants, especially those with poor appetities, has been "substantially improved" by small additional amounts of an essential amino acid, lysine, in a typical diet, Dr. Anthony A. Albanese, Chief, Nutritional Research Laboratory, St. Luke's Hospital, Greenwich, Connecticut, told the national meeting of the American Chemical Society which met in New York in September. Drs. Reginald A. Higgons and Gertrude M. Hyde, medical doctors, and Louise Orto, a chemist, all of St. Luke's hospital, were co-authors of the paper.

Lysine not only improved growth but also raised the hemoglobin and plasma protein contents of the blood, and, in some cases, improved appetite, said Dr. Albanese. He pointed out that the lysine requirements for infants are twice those of normal young adults. Chemical analysis showed that typical feeding formulas, containing adequate proteins, vitamins, and minerals, were short of the ideal amount of easily-digested lysine. These findings suggest that the nutritional value of many infant foods, including cow's milk, can be improved by small additions of lysine. Noting that pediatricians have long recommended meat preparations to supplement the diet beyond the sixth month of life or earlier, Dr. Albanese declared:

"These measures have been shown to succeed with infants of good appetite and to fail with infants of poor appetite. Recent evidence points to the fact that these failures may be associated with digestive enzyme deficiencies which prevail in young infants. In the face of such circumstances, other methods for enhancing the nutritional value of milk need to be explored. The addition of easily assimilated lysine to infant formulas seems to offer one solution to the problem."

Observations were made on fifteen infants, ages one to twenty-seven months, for periods varying from nine to twenty-one weeks. These children were fed standard fresh or evaporated milk formulas with supplementary foods, in accord with prevailing pediatric practice. The vitamin and mineral content of the diet was as high as, or higher than, the recommended levels. Extra lysine was added to the formulas for three to four weeks in about the middle of the observation period for each child. For comparison, another group of nine infants received a similar diet, but without the added lysine.

The body weight and nitrogen balance of five of the fifteen infants were markedly improved by the lysine supplement. The infants in this group ranged in age from six to twenty-five months and generally had poor appetities. In every instance, prior to determining the effect of lysine supplements, improved nutrition was attempted by increasing the dietary protein. In most infants, this caused a transient increase in weight gain and nitrogen balance, which was soon followed by decreases of greater magnitude in appetite and body weight.

Emphasizing that the lysine-fortified diets were effective only with children who were not getting adequate nourishment from their food, Dr. Albanese pointed out that four of the fifteen infants showed no observable improvement when lysine was added to their diet. The growth rate of these children was already well above average.

The remaining six experimental children showed no spectacular weight gains during the period of supplemental lysine feeding, but significant and definite biochemical changes occurred. Urinalyses showed that more nitrogen was retained than before the lysine was added, indicating that the children gained in strength and sturdiness. It was also found that protein levels in the blood increased at the same time.

Dr. Albanese and his co-workers measured lysine requirements in terms of the need for another essential amino acid—tryptophan. Adults should have about three times as much lysine as tryptophan, whereas the ratio for infants is about six to one.

Current Comment

Developing New Diet Manuals[1]

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Do you accept criticism as a challenge to improve? Let me quote two sentences which appeared in the introduction to *Therapeutic Nutrition*, written by Herbert Pollack and Seymour Halpern, with the collaboration of the Committee on Therapeutic Nutrition of the Food and Nutrition Board, National Research Council (1).

> Dietary practices in hospitals have not kept up with the recent advances in the field of therapeutic nutrition. The majority of therapeutic diets outlined in the various hospital manuals, including the military, do not supply the nutrients necessary to maintain good nutrition during the acute phase of an illness, and insufficient attention is given to the extra requirements for the convalescent and rehabilitation phase of medical care.

Criticism is helpful when it stimulates us to look critically at our procedures and encourages us to ask, "What can we do?" It is with this question that we are concerned here.

The immediate purpose of writing a diet manual is to have available a procedure and teaching guide for all groups in the hospital concerned with the feeding of patients—dietitians, nurses, medical staff, and students. On the surface it would seem, therefore, that decisions made in writing a manual would be confined to the individual hospital and its needs. Certainly, it is true that in many details there can be little conformity among hospitals. In some, the manual will be used only as a procedure guide; in others, it may be used for teaching purposes. Policies regarding meal hours, ordering diets, nourishments, and instructions at the time of discharge are necessarily individual. However, there are larger issues involved in writing a diet manual. As dietitians we are, or should be, concerned with greater standardization of therapeutic diets, correct terminology, simplification of diet therapy, as well as the problem posed by Pollack and Halpern of planning diets which meet the nutritional needs of the ill or convalescent individual. The problem, then, is one of preparing a manual for a specific hospital with emphasis on simplification and as much standardization as possible, correct usage of dietetic terms, and diets which meet therapeutic requirements.

Fortunately, material has already been developed which can make this work easier. I am thinking particularly of three publications. The first is a four-and-a-half-page mimeographed report, "Guide for the Preparation of Diet Manuals" (2); the second, a book, *Handbook of Diet Therapy* (3); and the third, the publication already mentioned, *Therapeutic Nutrition* (1).

The "Guide for the Preparation of Diet Manuals" (2) was prepared as a result of Diet Therapy Section Project #2, 1952–53, of The American Dietetic Association. It draws together the procedure of preparing diet manuals. It is helpful because it organizes the process step by step. It gives information on the purpose of the manual, material to be included, nomenclature of diets, diets to be included, the appearance, and general instructions. (A description of this project appears in the following article by Doris Johnson.)

DIETETIC TERMINOLOGY

Once the purpose of a manual is established, the actual writing can begin. One of the questions which will come up early is terminology. Corinne Robinson has said (4):

> Dietetic terminology, in a very real sense, is a measure of our professional progress. Moreover, our use of words is a yardstick by which others can and do understand or misunderstand us. When dietetics was a new profession and when our work was comparatively limited in scope, there was probably no great difficulty in understanding one another. However, as a result of our rapid growth, both in numbers and in professional activities, we find that we don't always "speak the same language."

Most of us, I think, would agree with this comment. Many of us could cite examples from our own experiences to illustrate her point that we don't always "speak the same language." We change positions and find that we must learn new terms. Some of us work with physicians who hold staff appointments at two or more hospitals, and we frequently find that their interpretation of given diets is based on the practice at one of the other hospitals, which may be different from our own. A system of dietetic nomenclature which would be widely accepted would help to eliminate some of this confusion and inconsistency. It would not only help to unify dietary programs, but it would result in a more adequate filling of the physician's prescriptions. Evaluating

[1] Presented at the Dietetic Section Meeting, Tri-State Hospital Assembly, in Chicago, May 3, 1954.

[2] Present address: National Dairy Council, Chicago.

new diets would be easier, and in research, it would help in comparing results.

One way of approaching the question of dietetic terminology is to look at the titles of diets which now appear in manuals. Diets in which sodium is restricted are frequently referred to as "salt free" or "low salt"; diets used in treating gastrointestinal diseases are listed as "modified Sippy," "minimum residue," "non-residue," "non-irritating," "low fiber," "bland," "bland, low-residue," and so on. The qualitative terms "high" and "low" often describe diets in which there is an increase or decrease in the composition of the diet. It is common to see "gallbladder diet," "ulcer diet," "chronic ulcerative colitis diet," "anemia diet," and on through the list of diseases where diet therapy is part of treatment. Another method is to use the author's name as a descriptive title. Sippy, Meulengracht, and Kempner are among the most familiar of this type.

What are the objections to these methods? The term, "salt free" is not advisable because no diet is entirely free of salt. The title, "low-salt diet" is not recommended either. Although the restriction of salt is important in certain disease conditions because it is the most commonly used seasoning contributing sodium to the diet, the use of the word "salt" may encourage a person to overlook other important sources of sodium. The preferred term is "sodium-restricted diet," which is defined in the glossary of the *Handbook of Diet Therapy* (3) as "a diet in which the sodium level is limited to a prescribed level." Therefore, in addition to listing the diet as "sodium restricted," the level of sodium should be included, so that the titles read "200-mg. sodium diet," "500-mg. sodium diet," and so on.

It is more difficult to reach agreement when talking about diets used in the management of gastrointestinal diseases. Actual research on the behavior of certain foods in the body is meager. The glossary, referred to above (3), prepared by a committee of the A.D.A. Diet Therapy Section, defines a bland diet as one which is "chemically, mechanically, and thermally non-irritating." This is different from a low-fiber or a low-residue diet. A low-fiber diet is described as one "which contains a minimum of indigestible carbohydrates and no tough connective tissue." One group of investigators studied the amount of residue produced by certain foods. From their experiments, they concluded (5) that the foods which give the least residue are: gelatin, sucrose, dextrose, Karo, concentrated broth, hard boiled egg, meat, liver, rice, farina, and cottage cheese. Among those which give the largest residues are: fruits, potatoes, bread, lard, butter, Swiss cheese, soft boiled egg, raw egg albumin, milk, and lactose. Many low-residue diets are based on these experiments. If we use the terms "bland" and "low-fiber" as they are outlined in the *Handbook of Diet Therapy*, we will be one step closer to agreement on these diets.

In a widely used textbook of clinical nutrition (6), a simplified working concept of diet therapy as it applies to the gastrointestinal diseases is presented. Fourteen of the conditions are divided into four basic groups. All but one of the fourteen conditions are treated with a bland diet, which is varied as needed. The fourteenth condition—atonic constipation—is treated with a bulky, high-residue diet. If the practice had been followed of naming diets for the condition, you can see that there would have been fourteen instead of two dietary programs, resulting in unnecessary duplication and complexity. It is this kind of thing which makes diet therapy seem more difficult than it really is. We are trying to sell good dietary practice. If we make it too difficult, physicians, nurses, and students will not buy it. Here we have a way to simplify: use fewer diets with names which give the underlying principle. For the patient, there is also the psychologic advantage that he isn't constantly reminded of his illness.

Some of the same objections apply to using authors' names; it increases the possible number of diets, and it is difficult or perhaps impossible to know what the characteristics of the diet are, since the title gives no clue.

The terms "high" and "low" are non-specific. For instance, a forty-year-old woman, 5 ft. 2 in. tall, weighing 110 lb., pursuing a sedentary occupation has a maintenance caloric requirement of approximately 1700 to 1800 calories. If she were placed on a 3000-calorie diet, you would expect her to gain on an average about 2 lb. a week. For her, 3000 calories is high caloric. But, for a forty-year-old man, 6 ft. 1 in. tall, weighing 175 lb., working as an expressman, 3000 calories is only a maintenance requirement. Or we can use sodium restriction as another illustration. A person who is not limiting his intake, may consume between 5 and 10 gm. sodium daily; therefore anything under 2 gm. sodium daily could be considered low for him. But for some conditions, a daily intake of 2 gm. sodium is high. Listing diets in terms of specific levels of nutrients when they are essential to using the diet successfully will eliminate some of the confusion which now exists.

In summary, the following standards have been proposed by Mrs. Robinson (4) as characteristics of good dietary nomenclature:

(a) When a term is used, it should have the same meaning no matter where it may be used.

(b) Terminology should be related to the modifications of the normal diet; i.e., it should indicate modifications in nutrient levels, consistency, flavor, and so on.

(c) Nomenclature should be sufficiently specific that there can be no confusion with regard to nutrient levels whenever the success of a diet depends on fairly close regulation. For example, the designation, "200-mg. sodium diet," is preferred to the more relative term "very low sodium diet."

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(d) The names of diseases or description by symptom should be avoided in labeling a diet.

(e) Names of people should not be used to designate a diet.

The *Handbook of Diet Therapy* (3) compiled by Dorothea Turner for The American Dietetic Association presents a simplified and practical approach to diet therapy. Many, maybe all of you, are not only familiar with it but are using it. However, may I emphasize again that it *does* present a practical and simplified program of diet therapy which could be easily adjusted for hospital manuals. The glossary is a valuable contribution and will help in clarifying dietetic terms. Further, it is through using a book such as this that we can do something towards effecting greater standardization in therapeutic diets.

NUTRITIONAL NEEDS OF THE NORMAL PERSON

At present, the Recommended Dietary Allowances (7) released by the National Research Council are most commonly used as the goal in planning meals. As you know, these recommendations apply to normal healthy individuals and are not designed to meet the needs of acutely or chronically ill, injured, or convalescent patients. Therefore, it follows that if therapeutic diets are written to meet the Recommended Dietary Allowances, the meal plans which result will not always satisfy the nutritional requirements of the sick person.

NUTRITIONAL NEEDS OF THE ILL

The publication mentioned above, *Therapeutic Nutrition* (1), was authorized by the Food and Nutrition Board with the hope that it would stimulate further thought and research in the area of therapeutic nutrition. It summarizes available material and generally is focused on the nutritional needs of the hospitalized patient. It would seem that we should consider the Board's recommendations even though they may be altered with more extensive and continued research.

You will find *Therapeutic Nutrition* (1) a concise summary. Almost 800 references have been utilized to present information on: functions of components of the diet in metabolism; non-dietary factors affecting metabolism; evaluation of nutritional status; consequences of nutritional deficiency; relation of protein disequilibrium to disease; nutritional requirements of the sick, injured, and convalescent; and therapeutic nutrition for specific conditions.

The section of immediate concern to us in writing diet manuals is the chapter presenting the specific nutritional needs of the ill person. I have attempted to select statements from this section which summarize these special requirements. I have chosen those which we usually calculate when outlining meal plans—caloric needs, protein, thiamine, riboflavin, niacin, vitamin A, ascorbic acid, vitamin D, calcium, and iron.

Energy

The average adult afebrile patient with minor injury or illness at bed rest can be maintained in caloric balance by an intake of about 2000 calories a day. Other situations may change this basic figure. Restlessness of a bed patient may increase the requirements 10 to 20 per cent. We are probably all aware that fever increases caloric requirements—for each rise of 1°C. in body temperature, there is an increase of 13 per cent in caloric requirements. Severe injury or illness may increase the needs to a level of 2500 to 4000 calories per day. In a severely depleted individual, an intake of 3500 calories or more may be desirable. In instances where severe chills occur in addition to fever, as in malaria, the patient may expend up to 5000 calories in 24 hr.

Finally, caloric requirements must be considered in relation to other nutrients. In diseases or injuries in which there is a tendency to lose body protein, giving as much as 50 to 100 per cent more calories than the calculated requirement has, at times, made it possible to maintain protein equilibrium.

Protein

There is evidence to show that severe depletion of body protein can lead to many complications—prolonged convalescence, poor wound healing, an increase in complications after surgery, increased susceptibility to infections and anemia, and other conditions. The National Research Council recommendation for protein can usually be considered adequate for previously well nourished individuals who are ambulatory patients or who require only brief periods of hospitalization. However, bed patients who require more than ten days' hospitalization, patients losing formed protein (from burns, exudates, ascites, or renal disease), and those not forming sufficient protein (hepatic disease) will often require larger amounts of protein than is usually supplied by routine diets. The Board recommends, in *Therapeutic Nutrition*, that both before and after surgery patients should receive about 150 gm. protein per day as soon as the clinical status of the patient allows.

Vitamins

Vitamin requirements in disease and injury have not been completely determined. It is common practice to give up to ten times the recommended normal daily allowances to people under stress. However, in many instances these large intakes are probably not indicated. In arriving at suggested allowances, Pollack and Halpern (1) consider the following factors: (a) requirements for normal individuals, (b) the nature and duration of the disease or injury, (c) the known body capacity for storage of the various vitamins, (d) known losses through the skin, urine, or intestinal tract, and (e) the interrelationships of nutrient requirements.

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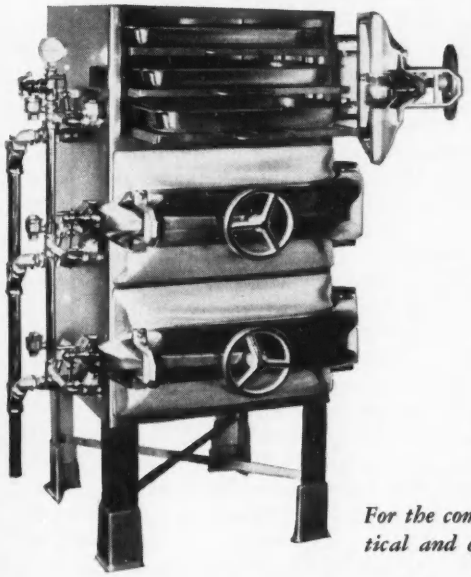

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There is no evidence that in minor injuries or illness the thiamine requirements are greatly increased above the recommendations for normal adults. The severely diseased and injured person who has had no serious depletion should receive about 5 mg. thiamine daily. When a definite depletion exists, as indicated by an inadequate previous diet, indicative signs of deficiency, or very low concentrations in the urine, 10 to 25 mg. thiamine per day may be given for the first week or ten days, to be followed by a maintenance dose of 5 mg. daily until convalescence is well advanced.

Riboflavin requirements in disease are not clearly defined at present. Minor illnesses and injuries, if food consumption is normal, should not alter the recommendations for healthy adults. After a severe injury, illness, or burn, requirements may be increased five to ten times.

Niacin requirements in health and disease are related to the protein intake. Tryptophan can serve as a precursor of niacin. As with the other members of the B-complex, not much is known about the requirements of niacin in stress situations. The recommendations under normal conditions are about ten times those for thiamine, or 15 or 20 mg. per day. During the acute phase of illness and in the early period of convalescence, at least 50 to 100 mg. niacin should be given. Where there has been previous depletion or evident signs of niacin deficiency, up to 500 mg. niacin per day is advisable, at least during the first seven to ten days.

Opinions differ as to human requirements for ascorbic acid. After reviewing the varying recommendations, the authors of *Therapeutic Nutrition* conclude that the recommended allowance of 70 to 75 mg. daily for a normal adult is desirable under normal conditions. Under moderate stress circumstances, about four times this recommendation—or about 300 mg.—will suffice. Burns or extensive tissue trauma and long bone fractures are the exceptions, and up to 1000 mg. daily should be given during the acute phase and 300 mg. until convalescence is established. After that, 70 to 100 mg. daily is probably sufficient.

Short-term illnesses probably do not require any supplementary vitamin A except in hepatic disease where storage or availability may be less than normal. When daily vitamin supplements are being given, it is suggested that 5000 I.U. vitamin A be included. Larger amounts are unnecessary, and extremely large dosages may produce undesirable side effects.

There have been no studies to indicate whether acute febrile bacterial diseases, surgical procedures, and burns alter vitamin D metabolism in adults. For fracture cases, because of the role of vitamin D in calcium and phosphorus metabolism, adequate amounts of vitamin D (estimated to be about 400 units daily) should be insured.

Minerals

It is thought that the National Research Council recommendations for calcium and iron are sufficient, except for the most unusual circumstances.

You will recognize that the actual carrying out of some of these suggestions is the responsibility of the physician. However, we should not underestimate the influence of the well informed dietitian.

NUTRITIVE NEEDS IN SPECIFIC DISEASES

In looking at the Board's recommendations for specified conditions (1), we find these statements. Throughout convalescence after surgery, the recommended daily allowances of nutrients for normal, healthy people should probably be exceeded by about 100 per cent (except for calories), with the protein intake, especially, kept high.

In discussing fractures, the following statements appear. Fractures heal poorly when the tissues are depleted, and formation of good callus is accelerated when adequate proteins are available. The amount of protein to be administered depends on the extent of the fracture, the anticipated duration of convalescence, and the previous nutritional state. About 150 gm. protein per day may be needed in addition to 3000 non-protein calories.

For replacing losses and reconstruction of tissue after burns, large amounts of protein are necessary (as much as 300 gm. per day), depending on the extent and severity of the burn. The caloric content of the diet must be adequate. As much as 3500 to 5000 calories or more per day may be indicated. Vitamins should be supplied in quantities to meet increased requirements. The recommendations are for a parental vitamin mixture and vitamin capsules.

In diarrhea and dysentery the diet of choice is a chemically bland, low-residue type, high in protein (1.5 to 2.0 gm. per kilogram per day), high in calories (45 calories per kilogram per day), and served in small amounts.

In chronic diarrheal diseases—including ulcerative colitis—bland, low-residue diets may need to be continued for a long time. Unless careful attention is given to maintaining an adequate intake of calories and protein, considerable body weight may be lost and tissue protein depletion may ensue. To prevent this and to accelerate recovery, up to 4000 calories and about 150 gm. protein daily may be necessary.

Patients with peptic ulcer should receive a minimum of 100 gm. protein a day.

Febrile patients require 3000 to 4000 calories, 125 to 150 gm. protein, 3000 to 3500 cc. water, sufficient salt, and vitamin supplements. In chronic infections, the caloric requirements will depend on the presence or absence of fever. In the absence of fever, 2500 to 3000 calories and about 150 gm. protein are desirable.

The diet in diabetes mellitus varies with the individual. Definite recommendations, therefore, cannot

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be made. However, the Board recommends that the exchange lists proposed by the American Diabetes Association, the U. S. Public Health Service, and The American Dietetic Association (7) be incorporated into all hospital diet manuals.

Therapeutic diets in liver disease should provide a daily minimum of 3000 calories. These may consist of approximately 100 gm. protein, 400 gm. carbohydrate, and 100 gm. fat.

In concluding, let me list again the three publications available for our use in preparing diet manuals —the four-and-one-half-page leaflet, "Guide for the Preparation of Diet Manuals" (2); the book, *Handbook of Diet Therapy* (3); and the booklet, *Therapeutic Nutrition* (1). If we use them, we can expect not only improvement in our diet manuals but improvement in dietary practices as well.

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A Guide for the Preparation of Diet Manuals

Diet Therapy Section Project #2, 1952–53, The American Dietetic Association

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Therapeutic nutrition has undergone various changes during which it has been realized that food, of itself, can be used as a part of the armament for the treatment of many diseases. From empirical diets bearing the names of doctors who devised them or the diseases for which they were prescribed, we now have therapeutic diets described in terms of modification of the normal diet and prescribed on a physiologic basis.

In order for the dietitian, doctor, and nurse to have a common understanding of what is included in a specific dietary regimen, a diet manual is a necessity in any hospital. Many diet manuals have been written. These have taken various forms and have included a variety of materials. From time to time, as they have prepared a diet manual for their own departments, dietitians have asked, "What is a satisfactory diet manual?"

So that there might be a discussion of this problem, sessions on the preparation of diet manuals were held at the annual meeting of The American Dietetic Association in 1952 in Minneapolis. Following these sessions, the Diet Therapy Section had as one of its projects the development of a guide for the preparation of diet manuals. This material is now available in the Association office (1). A report of the thinking of this committee now seems in order.

First consideration should be given to the purpose of a manual. Primarily, it is a procedure guide for all groups in the hospital who are concerned with the preparation and service of both normal and therapeutic diets. More than this, in many hospitals, it is also a teaching guide for medical students, nurses, and dietetic interns. In preparing a manual, thought must, therefore, be given to these twofold functions. If the manual is to be a teaching aid for students, more material may need to be included, although much of it may actually appear in the appendix.

Just what, then, should a diet manual include? Since therapeutic nutrition is based on modifications of the normal diet, it should be clearly described. As outlined in a manual, the normal diet should meet the recommendations for the average patient in bed without fever. These are given as 2000 calories per day (2). Minerals and vitamins are as given in the Recommended Dietary Allowances of the Food and Nutrition Board of the National Research Council (3). Variations of the normal diet for age, pregnancy, and lactation also should be outlined in the diet manual.

NAMING THE DIETS

The problem of dietetic terminology has been elaborated in the preceding paper. There is no doubt that the existing confusion deserves special attention. Therapeutic diets should be presented in terms of modifications of the normal diet—that is, variations in preparation, calories, protein, carbohydrate, fat, and minerals, and the titles of the diets should be given in these terms. If this is done, the practice of naming diets after the doctors who first devised them or for the diseases for which they may be prescribed will automatically fall into limbo. It is because of these two practices that there have been so many similar, but confusing diets. Furthermore, a diet named in this manner is then limited in its usage and the principle of the diet may be lost.

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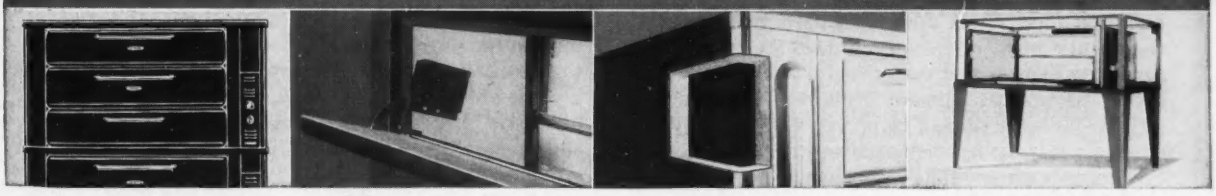

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Bizarre titles for diets often result as well, for example, "terminal diet," "vomiting diet," "gastric diet," and even "obesity diet." What is an "obesity" diet? Of course, the term is meant to imply a diet which will cause a loss in body weight, namely a low caloric diet. But does it? An alternative interpretation of the English might result in exactly the opposite concept, namely a diet to cause a gain in weight. Therefore, if the purpose of the dietary prescription is to achieve a loss in body weight, a term such as a "1200-calorie" or a "1500-calorie" diet should be used, thus indicating the specific modification of the normal diet.

If all diet manuals were written on the basis of modifications of the normal diet and the main modifications previously suggested were included, much standardization of therapeutic diets would result. This would do much to eliminate the problem for the physician who attends several hospital staffs of having to learn different dietary plans for each hospital. It would also help the patients, since they would not be given different foods on what is presumably the same diet. The hospitals within a community might well band together and use a common diet manual.

CHOOSING THE DIETS

The *number* of diets included in a manual should be kept at a minimum. Only those diets most commonly used should be given space. If the main modifications of the normal diet as suggested above form the basis of the manual, the major types of therapeutic diets will be included. Combinations of more than one modification of the normal diet need not be included, unless such a diet is very commonly prescribed. An example might be a high-protein (125 gm.), limited-fat (60 gm.) diet. Ordinarily, however, if more than one modification of the normal diet is desired, it may be so prescribed, and the dietitian can then make the necessary changes to meet the requirements of both modifications.

It is wasteful of space in a manual to include many such dual modifications. A diet manual should be concise and uncluttered with seldom-used material. Obsolete diets should be eliminated from diet manuals. Examples of such diets are high-vitamin and high-iron diets. It is now recognized that, from a therapeutic point of view, such diets are ineffective, since a patient cannot eat enough foods in a day to supply therapeutic amounts of most of the vitamins or iron. With the present emphasis on the greatly increased needs for nutrients under stress, it becomes ever more apparent that such diets are quite inadequate therapeutically.

There has been considerable discussion about whether the diseases for which a diet may be prescribed should be indicated in the manual. Many physicians feel that the use of the diet should not be given in a diet manual, since it is not considered wise to have a diet become a routine treatment for a disease. What may be proper for one patient may not be for another, and the prescription of a diet for a patient must take into consideration that patient's needs. Thus the diet should be prescribed on the basis of the principle of the diet and the condition of the patient. It is the doctor's prerogative to prescribe a diet, and it should be done on a rational basis and not as a routine. Therefore, the principle of the diet as outlined in the diet manual should be explicit.

STYLE AND FORM OF A MANUAL

In setting up the dietary regimens in a manual, it is suggested that a consistent form be used for all diets. The information for each diet should include, in addition to the name: the principle of the diet therapy with a statement of the adequacy of the diet in terms of essential nutrients; a list of the basic groups of foods and the amounts to be included daily; a detailed list of foods to use and foods to avoid, where necessary for the proper interpretation of the diet; and a suggested daily meal plan. The meal plan should be outlined in terms of food groups and amounts in terms of household measurements or average servings.

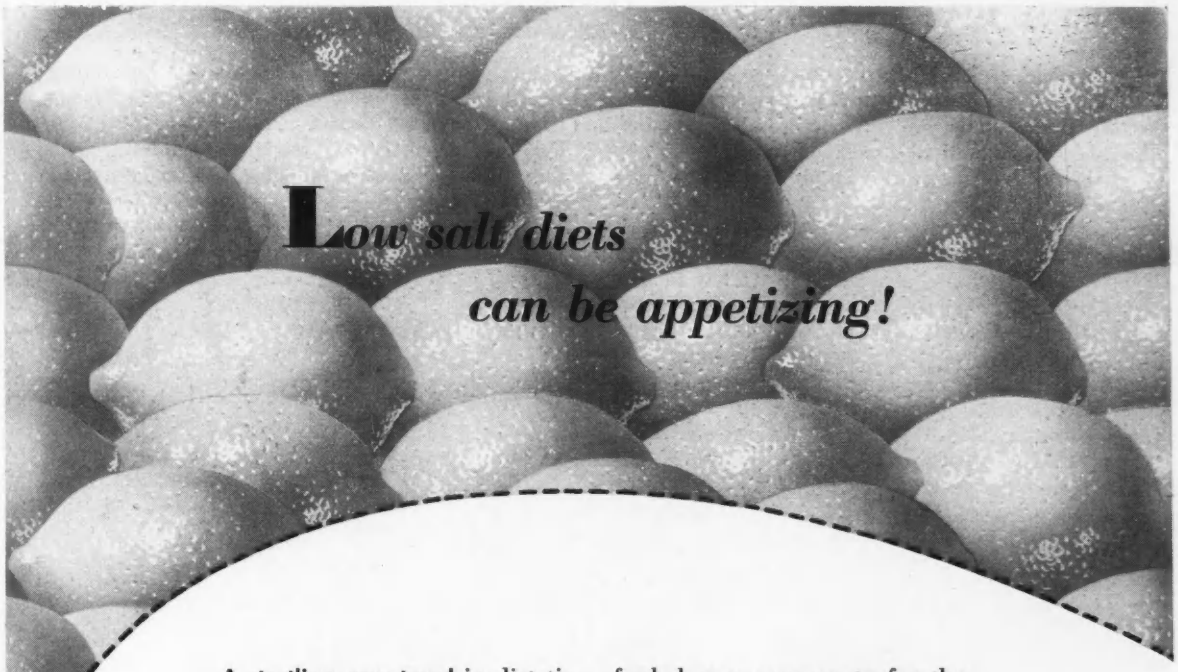
When a specific menu is given, it implies that the foods listed are the only or perhaps the best ones to be used on that diet, which is not necessarily the case. If, instead, a suggested meal plan is worked out in terms of food groups, along with a list of specific foods from which to choose, the diet becomes much more easily adapted to the individual patient's needs.

Other information which may be included in a diet manual might be suggestions about prescribing diets; pertinent information about the dietary department; height and weight tables; National Research Council Recommended Dietary Allowances; a list of references on food composition, nutrition, and diet therapy; tests which require dietary modification; and any other information deemed necessary for the groups for whom the manual is planned. It is important that there be a table of contents and a complete index.

The diet manual should be laid out in a form which is easily read. Headings should stand out, and spacings on the page should be adequate. It is an advantage to have a manual printed, since much better layouts are possible. This is, however, a much more expensive procedure than mimeographing and possibly than offset. The manual should be a convenient size, and the binding should be such that the book will lie open easily when in use. A spiral-binding of some type is suggested as best for this purpose.

THE DIET MANUAL COMMITTEE

If a diet manual is to be used successfully in a hospital or a community, it is essential that it meet the approval of the physicians for whom it is planned.



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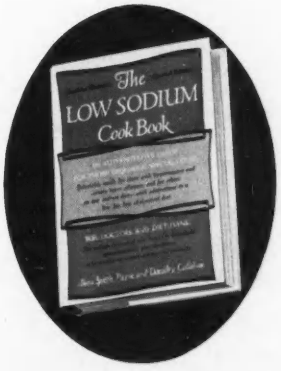

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To this end, it is imperative that a committee of doctors be formed who will advise on the preparation of the manual and who will endorse and implement its use. This committee should represent all services and should have members who are versed in nutrition and diet therapy.

The committee representing the dietitians should be well versed, too. It is their duty to prepare and present the materials for consideration. They should come to the joint meetings with well documented material and should be familiar with current theories. The material must be scientifically sound and presented in correct, grammatical English.

A most worthwhile project for a hospital dietary department or a local or state dietetic association is the preparation of a manual of diets for use in the local community or state, but we must be certain that such manuals are scientifically sound and professionally acceptable. To aid persons and groups in preparing diet manuals, the members of the committee for Diet Therapy Section Project #2, 1952–53, compiled a "Guide for the Preparation of Diet Manuals" (1) which is now available in mimeographed form from the Association office. It is suggested that groups planning to issue diet manuals refer to this guide and to the *Handbook of Diet Therapy* (4), the official publication of The American Dietetic Association.

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BIOGRAPHICAL NOTES ON THE HISTORY OF NUTRITION

Emil Fischer—October 5, 1852–July 15, 1919

If one reads Pavy's *A Treatise on Food and Dietetics*, published in 1874, one finds foods classified as nitrogenous and non-nitrogenous, with the latter subdivided into fats and carbohydrate. Little was known of the chemical structure of any of these nutrients. That same year, a young German chemist, Emil Fischer, received his Ph.D. at Strassburg University and entered upon a career which was to win for him the Nobel Prize in Chemistry and fame as one of the greatest physiological chemists of all times. It is to Fischer that we owe the foundations of modern biochemistry and our knowledge of the structure of the complex molecules of proteins, amino acids, polypeptides, purines, carbohydrates, enzymes, and dyestuffs. He constructed the first comprehensive system of structural formulas and introduced many of the names which are now in common use in carbohydrate chemistry, as well as the names "purin" and "polypeptide." He was the first to synthesize sugars and to build eighteen amino acids into a polypeptide, the most complex substance to be synthesized up to that time.

Emil Fischer was born on October 9, 1852, in Euskirchen, in Rhenish Prussia where his father, Lorenz Fischer, was a successful merchant. He studied chemistry at Bonn University under Kekule, then went to Strassburg (1872). In 1874, he was appointed to an assistantship there and in the next year discovered phenylhydrazine, which was later his tool for synthesizing sugars and for the osazone test so familiar now to all students of biochemistry. He went to Munich as assistant to the great chemist, Adolf vonBaeyer, and then in 1882, was Professor of Chemistry at Erlangen, at Wurzberg (1885), and at Berlin (1892). Among other honors, he received the Davy Medal of the Royal Society (1890), was elected a Fellow of the Royal Society (1899), and received the Nobel Prize (1902).

Fischer married Fraulein Agnes Gerlach, and they are described as a striking pair. He was tall, handsome, and well dressed, "eyes of wonderful brightness and manners of most engaging frankness and courtesy." He did not seek publicity and lived the life of a recluse, devoting himself to his laboratory and study. Foreign students by the hundreds flocked to him from all over the world, and special assistants had to be appointed to take care of them. T. B. Osborne, who contributed so much in this country to knowledge of protein chemistry, was his student. Emil Abderhalden was the student Fischer considered the most gifted. Imagination, painstaking perserverance, sound scientific training, an original mind, energy, and sound judgment, along with rare skill in devising apparatus needed for his researches, were the characteristics that contributed to Fischer's success.

He wrote three books on his researches: *Investigations on Amino Acids, Polypeptides, and Proteins*, *Investigations on the Purine Group*, and *Investigations on Carbohydrates and Enzymes.*

Fischer consistently overworked and also suffered from chronic poisoning from the vapors of phenylhydrazine. He died in Berlin, July 15, 1919.

REFERENCES: Hudson, C. S.: The basic work of Fischer and Van't Hoff in carbohydrate chemistry. J. Chem. Educ.: 120, 1953; Harrow, B.: Emil Fischer. Science n.s. 50: 150, 1919; H.E.A.: Professor Emil Fischer. Nature 103: 430, 1919.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

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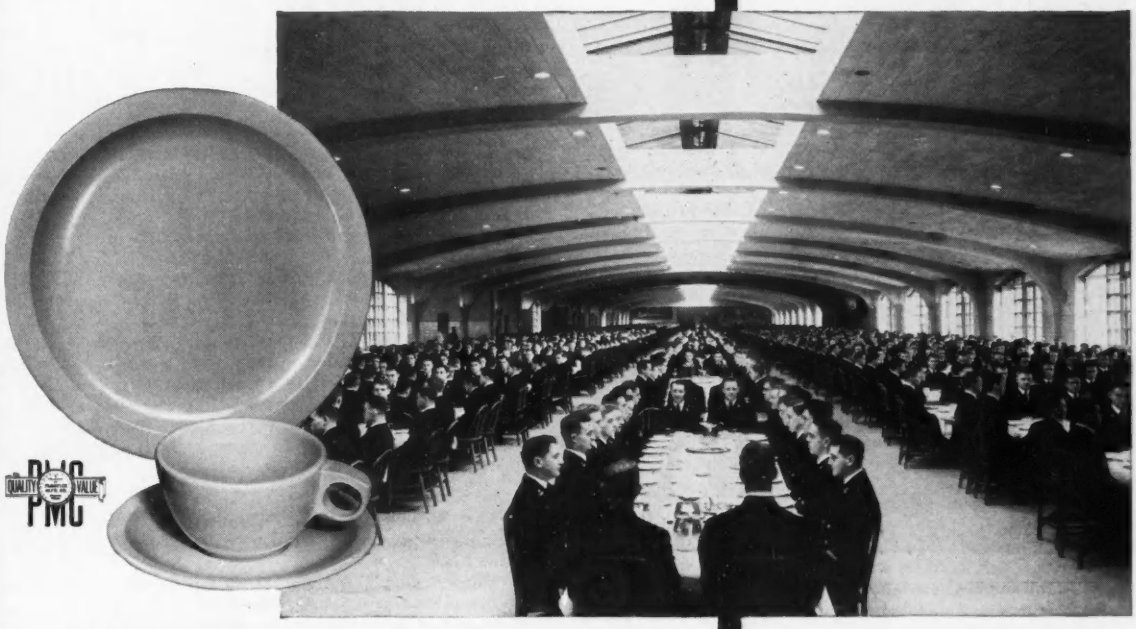

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Book Reviews

Eat, Think and Be Slender. By Leonid Kotkin, M.D. New York: Hawthorn Books, Inc., 1954. Cloth. Pp. 223. Price $2.95.

The reviewer's first reaction to this book was an immediate negative response to the title. It does not do the book justice.

The book is well written, easy to read, and full of human interest. It presents a sound, sensible approach to the problems of weight control. Rightly, the author says, "Knowledge of food is important, but it is certainly not enough." He advocates supportive psychotherapy as the most important part of the reducing regimen. This, he feels, enables the patient to try intellectually to understand why he is overeating.

The author goes into detail explaining neuroses and assumes that the physician will handle the supportive therapy. This approach is excellent when it is handled by a capable person such as Dr. Kotkin who apparently understands and deals with his patients realistically. He recognizes the complexity of the obesity problem and repeatedly suggests referring difficult patients to the psychoanalyst. The psychotherapy he suggests is of a supportive variety which he does not explain.

Because this book is written for the layman, the technical and medical explanations regarding glands, metabolism, neuroses, medications, and food elements seem out of keeping with this aim. However, the chapters on "Skinnies Have Troubles Too," "Relatives and Friends," "The Folklore of Fat," "Spot Reducing," and "Eating Out" are encouraging and enlightening to the prospective weight loser.

In evaluating the suggested dietary pattern, the calcium adequacy of the diet might be questioned, especially when the patient is doing his own choosing and perhaps is not fond of skim milk or pot cheese.

The author likens obesity to alcoholism. Therefore, he feels that the dietary pattern should be simple and strict. He states, "Permit them an occasional sweet or starchy dainty, and they will almost invariably take more." Also, he does not go along with the large-breakfast theory. He feels that a large breakfast leads to a large lunch and dinner. Psychotherapy, a high-protein diet, hunger-curbing medication, vitamin supplements, and weight watching comprise the plan he advocates for reducing.

This book may well serve to motivate the obese patient to seek help in understanding his eating problem and reducing his size. The author's approach to obesity as a neurosis is very optimistic. The reader is encouraged to feel that neuroses are common and treatable, and that consequently, the obese patient can be helped.—*June M. Norman, New Orleans, Louisiana.*

Salt and the Heart. By E. T. Yorke, M.D. Linden, N. J.: Drapkin Books, 1953. Cloth. Pp. 183. Price $3.45.

This book begins with a narrative describing one type of patient with heart failure in which uncontrolled quantities of foods in salt cannot be tolerated. The author then continues with a brief and simple discussion of the mechanisms that control sodium in the normal, healthy individual and cites several examples of conditions where sodium depletion could occur. He also discusses conditions of sodium retention, emphasizing heart failure. This book also mentions the controversial aspects of sodium restriction for high blood pressure and the contraindication for restriction of sodium in reducing diets.

The most valuable and useful section of the book deals with the construction of the low-sodium diet. Grouping foods as to sodium content within essential food groups and using a point system in the construction of a low-sodium diet seems a practical method of teaching this diet. The author also emphasizes the importance of other nutrients in the diet.

Some of the pitfalls and fallacies of food labels are stressed, as are foods which are acceptable and unacceptable in the low-sodium diet.

This book should be of considerable practical value for suggesting better and more expedient methods of teaching the low-sodium diet. It is written clearly and simply and should be helpful to anyone who must control sodium in the diet.—*Ann Reimer, Chief, Patient Dietetic Service, The Clinical Center, National Institutes of Health, Bethesda 14, Maryland.*

The Winslow Weight Watcher. By Thyra Samter Winslow. New York: Abelard Press, 1953. Cloth. Pp. 384. Price $3.50.

The Winslow Weight Watcher is said by the author to be "a complete course in nutrition for those who want to lose weight." It is dedicated to everyone from "physicians, dieticians, nutritionist, . . . domestic science instructors, . . ." to "authors of reduction books, lecturers, health stores, . . . and delicatessens," to name but a few.

The book is overwhelming in its size and content. Perhaps the fairest evaluation the reviewer could make is that here is a well-meaning lay person who has become sold on good nutrition and on weight reduction, but who has no basis for judgment in the matter and has let her enthusiasm run away with her. The writer seems to have included everything she has ever heard or read (and she has read widely), regardless of accuracy. Fact and fiction, authority and pseudo-authority, scientist and non-scientist are all mixed together in a hodge-podge until the reviewer is sure the authority or scientist cringes at seeing his name included. This lack of discrimination and selection is apparently the result of the author's inability to evaluate the material critically.

The author makes claims for nutrition which no scientist would do. Some of the material she presents is excellent, but it is lost among the misconceptions concerning the need of vitamin and mineral supplements for everyone, the value of special health foods, the value of "organic soil," the likelihood that obesity is due to a lack of vitamins, and so on. The sections on "The Human Garbage Pail" and "Reduction Fads and Fallacies" would indicate that the author does understand certain problems of the obese person and the person trying to lose weight by diet.

The reviewer found the book exceedingly tedious, due to its wordiness and repetitiousness. To the professional person, the inaccuracies and false ideas sprinkled throughout the text are exasperating and frustrating. The lay person may find it amusing to be taken behind the scenes to view the weight reduction problems of many well-known public figures.—*Charlotte M. Young, Ph.D., Professor of Medical Nutrition, School of Nutrition, Cornell University, Ithaca, New York.*

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Handbook for Diabetic Children. Rev. Edition. By Alfred E. Fischer, M.D., and Dorothea L. Horstmann. New York: Intercontinental Medical Book Corp., 1954. Paper. Pp. 64. Price $1.75.

Those whose programs of care still include recommendations for the weighing of food will find *Handbook For Diabetic Children* useful.

A concession to the special social needs of children for "sweets" has been made by the authors through additions to several of the Exchange Lists as worked out originally by the American Diabetes Association, The American Dietetic Association, and the Diabetes Section, U. S. Public Health Service. "Special occasion" foods, such as lollipops, chocolate kisses, chocolate bar, cider, and a cola drink are included with the Fruit Exchanges. Additions have also been made to the Bread Exchanges to include bread stuffing, gingerbread, brownie, sugar cookie, doughnut, and frosted cake. Other additions to this list are: puddings, French fried potatoes, and potato chips.

This little booklet is now sixty-four pages in length. In its present form, it will be of greatest value to the above-average, well motivated adolescent and his parents.

The use of illustrations and a simpler vocabulary might have resulted in a wider appeal.

Gourmet Cooking for Cardiac Diets. By Florence Field. Cleveland: The World Publishing Company, 1953. Cloth. Pp. 350. Price $3.50.

Reviewing *Gourmet Cooking for Cardiac Diets* has not been easy. To be fair to the author, who is described as a world traveler and the wife of a physician, one must admit the book is attractive, well designed, and readable. The coverage is comprehensive; it includes general reducing diets, sodium-restricted diets, low-cholesterol and low-purine diets, many recipes for low caloric combinations and low-sodium combinations, suggested menus, tables for cooking meats, and tables for caloric values of commonly used foods. The recipes are carefully and clearly given, indicating that the author is familiar with the construction and use of recipes. The book is well indexed.

Because of the title itself, one is not surprised to find wide use of wines, sauces, herbs, and spices. Even the suggestion of the dash of paprika on the cottage cheese before it is served and the mouth-watering suggestions for salads alone show that the author loves good food and realizes the importance of its being served attractively. This is fine.

Also, one cannot quarrel with the expressed purpose of the book, that of suggesting ways to provide "diet" food with zest and palatability and to provide foods in the reducing and the low-sodium diets that can be served to the entire family with little alteration, or with the explanation of reasons for reducing diets for persons with cardiac disorders and for the low-sodium diets.

The low caloric diets generally follow the Basic Seven and often include three glasses of milk daily, but many of these diets are low in protein and other nutrients. The author gives good warning against fads in reducing diets and against the use of drugs when reducing.

The recipes and combinations of foods low in sodium are appealing, and very possibly these would be useful in giving variety to the moderately restricted diet. There are many recipes for a variety of low-sodium breads and cookies, pie crusts and fillings, meat and fish concoctions, salad combinations, and soups.

Nevertheless, fine as these parts of the book are, the inaccuracies in this widely circulated book introduce hazards for the lay reader. For instance: the basic, often-used "low-calorie mayonnaise" recipe is built around mineral oil. Sucaryl is often used, without specifying the calcium form and but one short sentence early in the book mentioning this form. The author outlines 800- and 1000-calorie diets with no mention of the advisability of using supplements. Many will question her understatement, "Since milk contains sodium . . ." And the dairy industry may take issue with the inclusion of whole milk and ice cream on the list of "Foods to Avoid" in low-caloric diets. Vegetables and fruits are classified into the old 3, 6, 9, 12, 15, and 18 percentage groups, but no reference is made to this in the pattern diet or suggested menus.

The reviewer does not wish to be patronizing of the content of a book written by one untrained in professional dietetics. However, the errors can perhaps serve to point up the fact that a recipe book, such as *Gourmet Cooking for Cardiac Diets*, in which much therapeutic advice is given would have been better had the author collaborated with a dietitian, or at least had her book edited by a qualified critic. In view of the many good points, one hopes that the inaccuracies will be corrected in later editions.—*Mary H. Macomber, Des Moines, Iowa.*

The Improvement of Patient Care. A Study at Harper Hospital. By Marion J. Wright. New York: G. P. Putnam's Sons, 1954. Cloth. Pp. 236. Price $5.50.

A problem common to most hospitals faced Harper in Detroit in 1950. The immediate task was staffing almost 10 per cent more beds in a new building, at the same time maintaining the existing facilities. The administrator and board of trustees chose Marion J. Wright, R.N., a graduate of Harper Hospital School of Nursing, who also had a degree of Master of Science in Hospital Administration, to make a study of the matter. In addition to Harper Hospital, three other institutions participated in the study: Grace Hospital in Detroit, Hackley Hospital in Muskegon, Michigan, and Cottage Hospital of Grosse Point, Michigan.

This is one of the first hospital programs to introduce the principles of industrial engineering. The special knowledge and skills of authorities drawn from the areas of business and industry were utilized. When the results of the study were brought to the attention of the American Hospital Association, it was felt that the information would be of such value to other hospitals that funds were provided to develop the manuscript for this book.

The entire study was based on the idea that each individual comprising the hospital staff contributes to patient care. The place of the dietary department in the over-all picture is interwoven throughout the book. Questionnaires filled out by patients emphasized that good food is one of the most important public relations avenues. One of the major criticisms of food service involved the temperature of the food as served; another was the taste. The prime source of complaint of the medical staffs concerned coffee.

Questionnaires filled out by dietitians themselves brought to light the variance in opinion as to some of the responsibilities of the department. There was a question as to whether job analysis was a function of their department. Some dietitians believed that assistance in feeding patients should be done by their department.

As a result of the study, changes and improvements were made. Those involving the dietary department included the development of a dietary aide program, using semi-skilled workers to supervise the work in the kitchens under the direction of staff dietitians and dietetic interns, and an enlargement of the dietary maid service so that certain functions formerly carried on by the nursing staff might be transferred to the dietary department. Largest among the new duties was the passing of trays to the patients by dietary maids.

Concluding the book are twenty-two appendices which include samples of all questionnaires used for patients, medical staff, professional and nonprofessional staffs, and other hospitals; analysis sheets; bibliographies; duties list for selected classification of personnel, developed as a result of this study; and other records. A part of this section also gives the duties of dietary maids and dietary aides.—*Margene A. Wagstaff, Warrenville, Illinois.*

RECENT BOOKS RECEIVED

Symposium on Protein Metabolism. Proceedings of Nutrition Symposium held at University of Toronto, October 30, 1953. Nutrition Symposium Series No. 8. New York: The National Vitamin Foundation, Incorporated, 1954. Paper. Pp. 107. Price $1.50.

Newer Concepts of the Causes and Treatment of Diabetes Mellitus. Proceedings of Symposium on Diabetes Sponsored by New York Diabetes Association, New York City, October 8, 1953. New York: The National Vitamin Foundation, Incorporated, 1954. Paper. Pp. 181. Price $2.50.

Let's Eat Right to Keep Fit. By Adelle Davis. New York: Harcourt, Brace and Company, 1954. Cloth. Pp. 322. Price $3.

Compilation of Diets. By The California Dietetic Association. Los Angeles: The California Dietetic Association (2007 Wilshire Blvd.), 1953. Loose leaf binder with punched sheets and section tabs. Pp. 180. Price $6 in U.S., $7 elsewhere.

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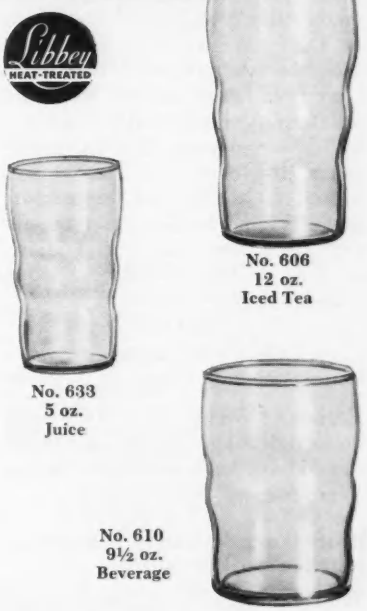

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Letters to the Editor . . .

Packaged vs. Canned Hams

To the Editor:—In the June issue of the JOURNAL, on page 589, we noticed the little squib on "ham labels." The first sentence reads, "When buying *canned* hams . . ." and goes on to distinguish between "Cook before Eating," "Ready to Serve," and "Fully Cooked." We believe this should have referred to *packaged* hams.

Canned hams are thoroughly cooked, ready to use. One- to 2-lb. part hams are processed to be shelf stable. On the cans of whole hams and picnics is the phrase, "Keep under refrigeration."

Packaged hams, on the other hand, vary as to the degree to which the ham has been heated in the smoke house. It is important to read the label to determine whether the ham is ready to use. "Cook before Eating" applies to processed hams that have been heated in the smoke house to a minimum of 137°F. internal temperature. This is high enough to kill trichinae, but such hams need further cooking. The labels "Ready to Serve" or "Ready to Eat" are used interchangeably. Hams carrying either of these labels have been heated to 147° to 149°F. Palatability is improved, however, by further cooking. "Fully Cooked" refers to hams that have been heated to an internal temperature of 149°F. and held at this temperature until the ham is thoroughly cooked, so that it may be eaten without further cooking.

BETH BAILY MCLEAN
Director of Home Economics
Swift & Company, Chicago

EDITOR'S NOTE: Mrs. McLean is quite right. The original statement should have read "packaged" rather than "canned" ham.

Processing Methods Alter Calcium in Milk Products

To the Editor:—We, at The Pennsylvania State University, have become quite concerned about the new heat treatment preceding the freezing concentration process used in drying milk. The product "Pream" is one illustration. The heat treatment lessens the flocculation of the protein. We understand that this treatment removes a significant amount of the calcium ions—according to published reports, as much as 50 per cent. Perhaps some investigation of this should be done, for we as nutritionists ought to be aware of what is happening to our calcium since we keep chanting, "Milk, milk, milk!"

MIRIAM E. LOWENBERG, Ph.D.,
Head, Department of Foods and Nutrition

and

MARY L. DODDS, Professor of Foods and Nutrition
The Pennsylvania State University, State College

To the Editor:—After conference with several people concerned about the problem of whether a nutritional hazard exists due to processing methods involved in preparing milk products for public consumption, the following conclusions may be drawn:

(a) Processing methods which might alter the nutritional value of milk in its various forms can represent a nutritional hazard if products for general use are seriously depleted of nutrients which we rely on them to provide.

(b) Dairy foods developed for special use, i.e., low-sodium milk, proprietary baby foods, and readily soluble dry cream, must be considered individually with respect to their nutritional value.

(c) No processing method can be considered a nutritional hazard in the experimental stage.

(d) Currently, many processing procedures are under investigation, but are not being employed by the dairy industry in the processing of staple dairy food items, though some of these procedures are used in preparing dairy foods for special uses.

(e) Frozen concentrated milk is not a commercial product at the present time.

(f) Removal of calcium by ion exchange is not commercially practiced in the processing of evaporated milk or in the drying of whole milk and nonfat milk solids.

(g) Pream is an example of a readily soluble dry cream from which some calcium has been removed. Although this product has household acceptance, it introduces no nutritional hazard, since its use as a food is not apt to be nutritionally significant.

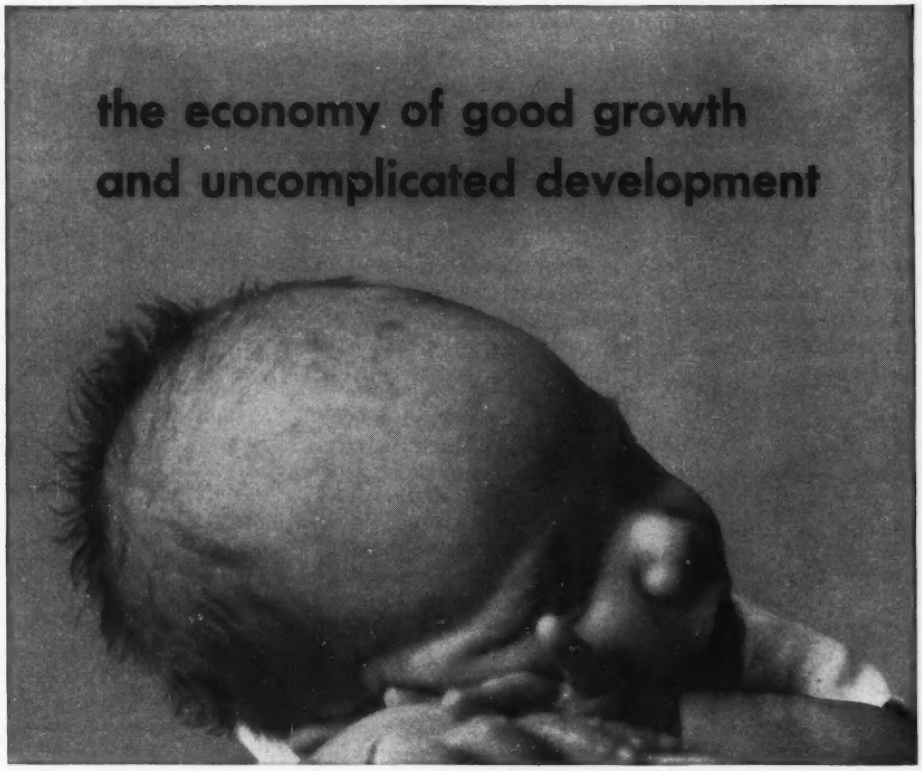
(h) The nutrient content of proprietary baby foods is usually stated on the package. A pediatrician, physician, or dietitian responsible for recommending a specific proprietary baby food is responsible for the nutritional welfare of the infant or child.

(i) In considering the nutritional implication of the processing of any dairy food, it is important that we have a picture of how our total milk production is consumed. About half of our milk is consumed as fluid milk and cream, one-fourth as butter, one-tenth as cheese, and one-eighth as ice cream and evaporated, condensed, and dry milk. It is obvious from this that whatever special products may be consumed in the U.S. are of a small order of significance from a public health standpoint.

It is important that we periodically consider problems of this kind. Only recently have the detrimental effects to infants of feeding a special proprietary baby food been put into the records. However, we believe that it is the joint responsibility of the companies manufacturing special products, doctors and dietitians prescribing them, the Council on Foods and Nutrition of the American Medical Association, and the Food and Drug Administration to insure that all special products marketed in the U.S. are wholesome and nutritionally adequate for the purpose for which they have been manufactured.

I should like to urge caution in the evaluation of modified foods of all kinds. Because many of our new products are developed for specialized uses, they must be evaluated on the basis of the special use for which they are designed.

ZOE E. ANDERSON, *Director*
Research and Nutrition Service
National Dairy Council
Chicago



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Community Nutrition Experience for Dietetic Interns

To the Editor:—Our dietetic interns very much need to have their training augmented by some work in the community in order to enlarge their outlook and to give them a better understanding of public health problems. I know that The American Dietetic Association recommends that dietetic interns gain community experience.

In some cases, I suspect the "needs" of a particular community are not always known to the internship, and if they are known, the dietitian feels the need for "specialized helps" to implement a program to meet these needs.

At different times during recent years, the home economists of the Dairy Council of St. Louis have been called on to conduct cooking classes for children at neighborhood settlement houses. However, our staff is small and services cannot be contributed year after year to carry on such work. What we have done has been to conduct a series of sixteen classes for ten- to twelve-year-old girls at Kingdom House. The class materials were prepared in detail in advance and then were evaluated after they had been used. As a result, we have summarized the class outlines and are making them available at a minimum charge to serve as guides to those who may teach or direct the teaching of others in educational programs of neighborhood houses or community centers.

The hospital or clinic dietitian might volunteer to provide leadership for the community center and have the dietetic interns conduct the classes. They could enlarge on the outlines and inject more nutrition along with the cookery—to the benefit of both the intern and the children. The laboratory periods can be much more than just cooking classes, as the guide indicates. The material included is not technical, but it does teach more than just cooking. Also, the classes are fun! This is important in any after-school activity for children.

The class outlines are simple and concise. There are not only clear directions for preparing easy recipes, but also hints regarding the nutritional value of the food prepared—the "why" as well as the "how." The girls learn the correct cooking methods for the different foods basic to well planned adequate meals. They need, and are given instructions regarding the preparation of vegetables as well as desserts. (The cooking of a cheese casserole can be glamorized and made as interesting as fudge or cup cakes!)

Suggestions are also given for serving. At Kingdom House, a dining room adjoins the kitchen, enabling the leader to teach table service and etiquette, as well, which adds considerably to the value of the course. In many homes in the crowded sections of the city near the settlement houses, families do not sit down together at the table to eat well prepared, planned meals. Too often it is last-minute shopping for ready-to-eat foods served "help yourself" style from the kitchen counter. For these girls to have an opportunity to learn how to prepare food well, to serve it attractively, and to eat it the "Emily Post" way is a new experience. Since many of the mothers as well as fathers work, the children often assume much responsibility for the shopping, menu planning, and food preparation. If these duties can be made interesting and challenging to the young shoulders carrying too heavy a load, the job will be done better and more happily. Also, the family will enjoy better health.

Copies of the lesson plans are available for use by those who might wish to plan similar projects, adapting our ideas to their needs.

DOROTHY DUCKLES HUDSON,
Nutritionist
Dairy Council, St. Louis District
St. Louis

Food Cost Control

The term food cost control has come to mean to the manager of any food service the control of all items of income and expense concerned with the functioning of the unit. Increasing the income by serving good food to more customers, or introducing time and motion economies are quite as important to the whole problem of good cost control as are better buying procedures or the elimination of labor and food waste in the preparation units.

The common approach to cost control all too frequently has been to increase the selling price of the food, lower the quality of food served, reduce the size of portions, and tolerate unacceptable service. Professional training is not required of the person following such a procedure. Anyone can do this. But, to provide meals at the lowest cost possible consistent with the policy of the institution in regard to quality and quantity of food service requires good management. There is no substitute.

Under good management, cost control will *not* be regarded as a means of providing less for the money received. Rather, it will be seen as a guide to prevent waste of raw foods, labor, and other materials. The procedures to be followed will be determined in part by the policies of the facility, insofar as food purchase, food standards, food service, and atmosphere and setting are concerned.

Administrators are becoming increasingly sensitive to the distribution of the food dollar. To meet the demands for good business practices, it is necessary that records be maintained in the various phases of operation, but records do not control costs—management must do this. An operational budget, simple but adequate records, well established controls of materials and personnel, and above all adequate supervision are the bases for successful solution of the financial problems in any food service—college, school, hospital, or commercial.—*Bessie Brooks West, speaking before the Illinois Dietetic Association in Chicago on March 11, 1954.*

Meat...

and Adequate Nutrition in Children

Though it is universally accepted that protein nutrition deserves special emphasis in childhood, the possibility of protein deficiency in children rarely receives adequate attention.[1] As shown by creatinine excretion, children frequently are deficient in muscle mass. Through improved protein nutrition muscle mass in these children often can be increased by as much as 25 per cent without increasing body weight, thus demonstrating that fat is being replaced with muscle tissue.[2]

Vigilant heed is necessary to assure that children get enough of foods supplying an abundance of biologically adequate protein and of vitamins and minerals. Rapid growth and the great activity of children make the demand for these nutrients and for calories even more urgent than in adults.

Surveys show that faulty eating habits largely are responsible for the high incidence of nutritional deficiency and anemia in school children.[3] Among commonplace practices carrying such nutritional hazards are small, poorly chosen breakfasts or omission of the morning meal; the selection of foods left to discretion of the child; overindulgence in foods and drinks providing calories but little of protein, vitamins, and minerals; failure to eat meat or equivalent foods in adequate quantity; and the eating of insufficient amounts of vegetables and fruits.[4]

Meats should be a regular item in the diet of children,[5] not only for its notable contribution of top-quality protein, but also because meat furnishes important amounts of B vitamins—thiamine, riboflavin, and niacin—and of minerals, including iron, potassium, and phosphorus.

---

1. Jeans, P. C.: Feeding of Healthy Infants and Children, J.A.M.A. *142*:806 (Mar. 18) 1950.
2. Flodin, N. W.: Amino Acids and Proteins, Their Place in Human Nutrition Problems, J. Agr. & Food Chem. *1*:222 (Apr. 29) 1953.
3. Nutrition of School Children, Editorial, J.A.M.A. *128*:1233 (Aug. 25) 1945.
4. Boyd, J. D.: The Need for Betterment of Children's Diets, J. Am. Dietet. A. *20*:147 (Mar.) 1944.
5. McLester, J. S., and Darby, W. J.: Nutrition and Diet in Health and Disease, 6th ed., Philadelphia, W. B. Saunders Company, 1952, p. 214.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 21, July, 1954

* The effect of feeding large amounts of emulsifiers polyoxyethylene (20) sorbitan monostearate (Tween 60) and sorbitan monostearate (Span 60) to humans. S. S. Waldstein, H. M. Schoolman, and H. Popper.—p. 181.

Effect of Emulsifiers on Human Beings. To evaluate the pharmacologic effect of emulsifying agents commonly used in commercial foods, a group of patients of an old people's and chronic disease infirmary were fed daily for twenty-eight days large amounts (6 gm.) of Tween 60 and Span 60. Nineteen were given Tween 60, 16 received Span 60, and 9 were given corn oil placebos in capsules resembling the Tween 60 capsules. Each patient was followed clinically and by many laboratory tests. No untoward clinical reactions were encountered. No significant changes occurred in the following tests: cephalin-cholesterol flocculation, thymol turbidity, serum albumin, globulin, bilirubin, cholesterol, cholesterol esters, creatinine, non-protein nitrogen, phospholipids, and blood urea nitrogen. The methods used produced no evidence that the feeding of 6 gm. Span 60 or Tween 60 daily for twenty-eight days produces deleterious effects on human beings.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 44, August, 1954

Viewpoints on the problems of chemicals in foods. A Symposium.

* Some new questions relating to chemicals in foods. F. C. Bing.—p. 977.

* The nutritional point of view: what is expected of foods? W. J. Darby.—p. 982.

* The views of the Food and Drug Administration: regulation of food additives. C. A. Herrmann.—p. 988.

Collection and analysis of dietary intake data. R. B. Reed and B. S. Burke.—p. 1015.

Current Problems Concerning Chemicals in Foods. The American Public Health Association takes the stand that approval by the Food and Drug Administration, prior to use, of chemical additives to foods should be required. Legislation to this end has been proposed. However, maintenance of the integrity of foods involves not only consideration of new chemical additives, but possibly a re-examination of ingredients commonly used in foods for years. The recent observation that coumarin could be damaging to the livers of experimental animals is a case in point, and manufacturers removed coumarin as a flavoring agent from the market. There is need for a major revision in the Federal Food, Drug, and Cosmetic Act to require pretesting and approval of food additives, regardless of origin (whether manufactured or natural). For instance, the use of algae and plankton as food has received considerable publicity as a possible new source of food. However, careful tests to determine the safety of eating unusual forms of animal and plant life are needed. We know, for example, that some plankton are poisonous and that paralytic shellfish poisoning may develop in persons who eat mussels which have consumed certain dinoflagellate organisms found at times in the coastal waters of the Pacific Ocean.

The Nutritionist Looks at Additives. Additives to food, intentional or incidental, may be totally utilizable as foodstuffs, partly utilizable, or may have no nutritive value whatsoever. Some additives, although devoid of nutritional value, may protect nutrients present in our foods; some may alter nutrients; and some may possess inherent toxicologic properties. Certain additives may be inert; others may be used to replace nutrients commonly associated with foods. The nutritionist has a just interest in and a responsibility concerning all of these possibilities. Considerations in relation to non-nutritive additives in foods are different from those which determine whether a particular therapeutic agent will be permitted in treating sick patients. From the nutritional standpoint, the answer to the query, "What is expected of foods?" is: Foods should be wholesome within the meaning of the definition which the Council on Foods and Nutrition of the American Medical Association has provided; they should contain at least those nutrients that are traditionally expected to be contributed by the particular food; and they must be available to the consumer and at a price and in a manner such that it is not prohibitive for the public to be well nourished.

FDA Viewpoint on Regulation of Additives. The law as it stands defines adulteration as the presence of any quantity of a poisonous or deleterious substance which may render a food injurious to health. The law makes a distinction between substances that may be present naturally and those that may be added. In the case of a natural substance of poisonous or deleterious character, the law considers the food containing it as adulterated only if the quantity of the poisonous substance renders it injurious to health. This is to avoid banning such food as coffee, the caffeine content of which may cause serious reactions in a sensitive person. At present, there is no legal compulsion that new additives, such as antioxidants, plasticizers, preservatives, softeners, and emulsifiers, be tested for safety before being introduced. The Food and Drug Administration is on record as favoring some sort of new legislation which will provide for testing prior to marketing, as is already provided legally for the introduction of new drugs. Such a procedure would contemplate placing on the manufacturer or developer of a new item the primary responsibility of investigating its safety.

Reliability of the Research Dietary History. This is a discussion of the reliability and validity of the dietary intake data on children between the ages of one and six years, obtained in a longitudinal study of health and development. The research dietary history, obtained by personal interview with the child's mother, was the instrument employed in this investigation. The statistical analysis of the data thus obtained is a by-product of the over-all continuous study of child health and development over a period of years. The reliability of the history was shown to be highly reproducible within a range of ± 10 gm. protein per day. By analysis of variance, it was shown that the instrument had a reliability of 71 per cent. It thus appears that this dietary history enables the determination of average levels of protein intake with a reliability found in anthropometric observations. On the other hand, the annual rate of increase in protein intake during this age period appears to be more subtle, and the instrument reveals this with only fair reliability. Actual statistical measurement of the validity or the ability to measure what it is designed to measure, was not possible. However, experience with the instrument indicates that it produces the information desired. Good correlations between intake data and rate of muscle growth in the lower leg indicate that the maternal reporting of the child's diet is accurate for the purposes desired.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 71, July, 1954

* Use of the vitamins. P. Williamson.—p. 21.

Use of Vitamins. Most deficiencies are deficiencies of general nutrition and not of a specific substance. The possible exceptions are infantile lacks in ascorbic acid and vitamin D. This fact of multiple nutritional deficiencies has been ignored, with the result that expenditures for vitamin pills is one of the greatest sources of waste of money in Canada. The best treatment of nutritional deficiency is nutrition, not pills. There is no cogent reason to supplement the diet of a healthy individual with vitamin preparations, even though millions have been convinced they cannot feel well without their daily pills. A plea is made to physicians to prescribe an adequate diet rather than vitamin pills.

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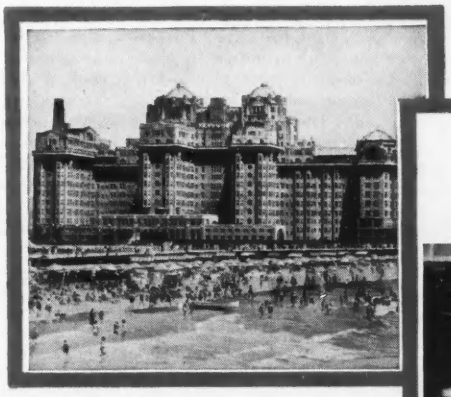

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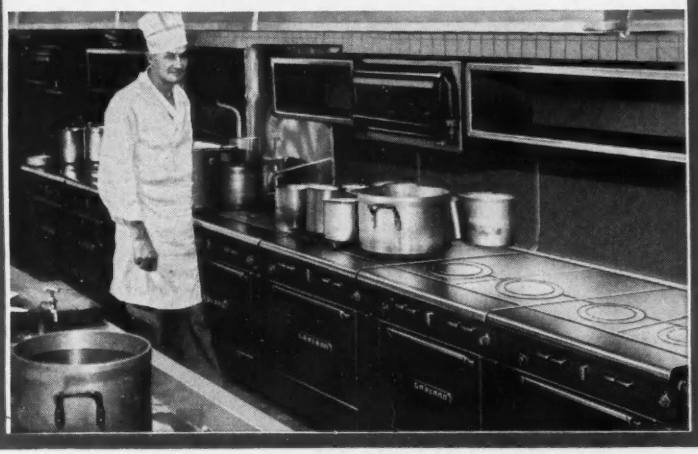

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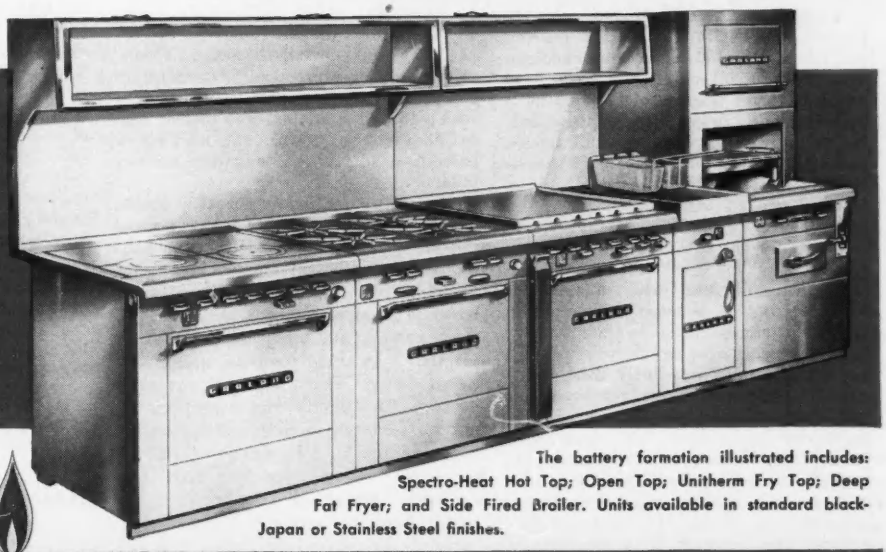

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JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 2, June 23, 1954

* Significance of the vitamins in human nutrition. L. D. Wright.—p. 672.

Vol. 2, July 7, 1954

* Milk souring. Effect of 2-methyl-1,4-naphthoquinone on the rate of souring of milk. G. G. Kelley and K. Dittmer.—p. 741.

Vol. 2, July 21, 1954

* Food enrichment. Progress and controversial issues. R. R. Williams.—p. 770.
* Pesticides and flavor. Benzene hexachloride content and flavor of peanuts grown in rotation with cotton dusted with this insecticide. I. Hornstein, H. Reynolds, and G. L. Gilpin.—p. 776.
* Pesticides and flavor. Flavor of peanut butter as affected by aldrin, chlordan, dieldrin, heptachlor, and toxaphene used as insecticides in growing peanuts. G. L. Gilpin, R. A. Redstrom, H. Reynolds, and F. W. Poos.—p. 778.
* Pesticides and flavor. Effect of benzene hexachloride sprays on flavor of fresh, frozen, and canned peaches. G. L. Gilpin, E. H. Dawson, and E. H. Siegler.—p. 781.

Protein quality assay. Comparison of rat repletion method with other methods of assaying nutritive value of proteins in cottonseed meals. C. A. Cabell and I. P. Earle.—p. 787.

BHC and Flavor of Peanuts. No off-flavor was found in peanut butter made from peanuts following cotton which had been dusted with the gamma isomer of benzene hexachloride. The cotton grown on the same soil the previous year had been dusted with 42 to 168 lb. per acre of 3 per cent gamma BHC. Analysis of soil samples taken before planting peanuts and after harvest showed no significant amounts of BHC.

Flavor of Peanut Butter as Affected by Pesticides. Studies leading up to the U.S.D.A. recommendation that aldrin, heptachlor, and toxaphene could be used to control the southern corn rootworm in peanuts are presented. No definite off-flavors in peanut butter could be attributed to the use of these insecticides in the soil. Palatability tests, combined with field trials of the effectiveness of these insecticides, form the basis for the U.S.D.A. recommendation.

Significance of the Vitamins. Vitamins have become large-volume articles of commerce since their discovery forty years ago. In many ways they are better known popularly than scientifically. Only now is research involving the most complicated aspects of biochemistry uncovering the physiologic basis of their action in the human diet.

Milk Souring. The possibility that milk spoilage can be reduced economically and practically by feeding menadione, the vitamin K precursor, to lactating cows is suggested. Cows fed menadione gave milk that remained sweet for 18 to 24 hr. at 37°C., while those not treated gave milk which soured after 12 hr. at the same temperature. At reduced temperatures, between 5° and 20°C., the effect of menadione was even more pronounced. Pasteurized milk from menadione-treated cows remained sweet 20 per cent longer. No off-flavors were detected.

Food Enrichment. The article contains a summary of the progress of enrichment with respect to each of the food products which are mentioned in the closing paragraph of the Food and Nutrition Board's "Statement of General Policy." The author discusses obligatory legislation, optional enrichment, and further possibilities. He stresses the fact that there is a widespread need throughout the world for enriched products.

Effect of BHC Sprays on Flavor of Peaches. Peaches sprayed with the isomer of benzene hexachloride and combinations of the isomers were tested for off-flavors. Mixtures of the isomers and the delta isomer were found to give the most pronounced off-flavor. Stored samples of frozen and canned peaches showed more off-flavor than the freshly processed. Canned samples showed off-flavors in more instances, raw samples, the least.

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Vol. 2, June, 1954

* The management of edema in the elderly. G. E. Miller.—p. 344.

Vol. 2, July, 1954

* A simplified nutrition program for the latter half of life. C. M. McCay.—p. 417.

Edema in the Elderly. Reduction of dietary sodium is the most successful of the secondary measures for the relief of cardiac edema, but its accomplishment is sometimes at a considerable expense. The aged cardiac patient may find the elimination of this seasoning an intolerable burden. If this is so, insistence on such a policy will cause nutrition to suffer and an additional hazard to age may be induced. Several salt substitutes are presently available and may satisfy a significant number of the group which cannot abide saltless meals. The cation exchange resins may also be of benefit in achieving a negative sodium balance.

Nutrition Program for the Aged. The nutritional status of every person during the latter half of life lies largely in his own hands and depends largely on his ability to curb his intake of such common foods as sugar, alcohol, low-grade cereals, and many fats, as well as his ability to select foods of high nutritional value. Three modern advances promise to simplify the usefulness of nutrition science, namely, (a) the formulation of teaching in simpler terms in the form of "exchange lists," (b) the increased action of public agencies against the introduction of useless or harmful chemicals into foods, and (c) the statement on labels of basic foods, such as bread, of the composition in terms of amounts of ingredients.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 155, June 12, 1954

* Ulcer patients and diets. Correspondence. M. Wishnofsky.—p. 666.

Vol. 155, June 19, 1954

* Effect of tea on gastric secretions and motility. C. W. Wirts, M. E. Rehfuss, W. J. Snape, and P. C. Swenson.—p. 725.

Vol. 155, June 26, 1954

* Reversible metastatic calcification (milk drinker's syndrome). M. Dworetsky.—p. 830.

Vol. 155, July 3, 1954

* Clinical response of spontaneous hypoglycemia to dietary and drug therapy. F. A. dePeyster and R. K. Gilchrist.—p. 884.

Diet for Ulcer Patients. The fundamental principle in treatment of ulcer patients is to give a low-carbohydrate, high-protein, high-fat diet. The nature of the carbohydrate—whether polysaccharide, disaccharide, or monosaccharide—is, from the practical standpoint, unimportant, according to this correspondent.

Tea and Gastric Secretions and Motility. The data suggest that the use of tea, taken as a beverage in average amounts, need not be contraindicated in the treatment of most gastrointestinal conditions. Tea appears to increase the rate of gastric emptying when compared to the effect of an equal amount of water, when used with a 40 per cent protein, carbohydrate, fat, or combined (eggnog) meal. The iced beverages seem to have a more pronounced effect in this regard than hot. Tea appears to stimulate gastric motility.

Milk Drinker's Syndrome. A case of secondary metastatic calcinosis due to prolonged intake of milk and alkali because of chronic duodenal ulcer is described. Remarkable disappearance of the calcinosis followed elimination of the excessive intake of milk and substitution of an aluminum hydroxide gel for the alkali.

Response of Hypoglycemia to Dietary and Drug Therapy. In three cases of spontaneous hypoglycemia ultimately treated by surgery, preoperative and interim treatment with dietary, alloxan, corticotropin (ACTH), and cortisone resulted in some remission of symptoms. A high-protein, variable-fat, and low-carbohydrate diet served in three meals with complementary feedings providing nourishment every 3 hr. is the most expedient management that may control hypoglycemic symptoms.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 209, July, 1954

* Plasma protein. V. The effect of the protein content of the diet on turnover. H. L. Steinbock and H. Tarver.—p. 127.
* Effect of threonine on fat deposition in the livers of mature rats. A. E. Harper, D. A. Benton, M. E. Winje, M. E. Monson, and C. A. Elvehjem.—p. 165.

On the lipotropic action of protein. A. E. Harper, D. A. Benton, M. E. Winje, and C. A. Elvehjem.—p. 171.

Fat Deposition in Rats. The amount of fat deposited in the livers of young rats fed a 9 per cent casein diet containing methionine and choline decreased gradually as the animals matured and their protein requirement decreased. However, when the protein content of the diet was reduced to 5 per cent, fat accumulated in the livers of mature rats. This accumulation of fat was reduced when the diet was supplemented with either threonine or glycine. Analysis of the livers and the fat indicated

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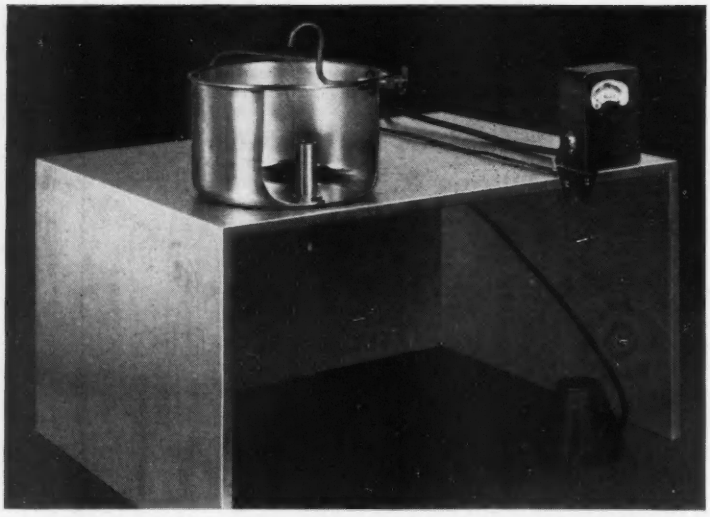
that, although there were increases in both the cholesterol and phospholipid fractions, the accumulation consisted of neutral fat. It is suggested that fat deposition in the livers of mature rats, like that in the livers of young rats fed low-protein diets, is affected by the balance of dietary amino acids.

Protein and Fat Deposition. The effects of choline, methionine, and additional protein on fat deposition in the livers of rats fed low-protein (casein) diets were studied. Neither choline nor methionine in amounts sufficient to meet the requirements for growth and the prevention of fatty infiltration prevented some excess of fat from accumulating in the liver. Only when either the protein or the threonine content of the diet was increased was the fat content of the liver reduced to what is considered the normal range. It is suggested that this secondary lipotropic effect of protein (the sparing of choline by methionine being the primary effect) is not a choline-sparing action but results from the provision of certain amino acids, deficiencies of which (with low-casein diet, threonine deficiency) cause fat accumulation in the liver. This effect is apparent only when the diet contains either choline or methionine in amounts approaching what is considered to be the requirement.

Dietary Protein and Plasma Protein. The purpose of these experiments was to investigate the effect of the protein content of the diet on the rate of replacement of the plasma protein. Results show that the percentage of protein in the diet greatly influences the half life and the rate of replacement of the plasma protein in rats. On a protein-free diet, the replacement rate is small, whereas on a high-protein diet it may be two or more times as high. From the changes in half life, replacement rate, and pool size which occur when the protein content of the diet is changed, it is deduced that such changes may cause either an increase in rate of synthesis or in rate of degradation, depending on the nature of the original diet.



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THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 16, June, 1954

* Consulting a dietitian in kitchen planning. K. J. Seath.—p. 10.

Consulting a Dietitian in Kitchen Planning. It is important that the dietitian be consulted about kitchen layouts and equipment at the blueprint stage before such permanent and fundamental features as plumbing and electrical lines have been laid. When plans have been drawn up allotting space to the various areas, the dietitian should check and pass the final plans for each area so that she is certain that all work flows in the correct sequence, that all the necessary equipment is included, and that such equipment can handle the production necessary. It is suggested that dietitians take postgraduate or refresher courses in order to be able to handle this part of their duties.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 33, July, 1954

* The effects of eating and of sham feeding upon the absorption of vitamin A palmitate in man. A. I. Mendeloff.—p. 1015.

Eating and Vitamin A Absorption. Normal fasting subjects may demonstrate no appreciable rise in serum vitamin A concentration during the 8-hr. period following ingestion of the test dose of vitamin A palmitate in corn oil. The feeding of a meal 2 hr. after a test dose activated the mechanisms whereby recently absorbed vitamin A entered the blood stream. Studies done on normal and gastrectomized subjects, with and without eating, cast doubt that this mechanism is intraluminal. It is suggested rather that the lacteals may be activated in some way by eating to expel their vitamin A into the blood stream. Sham feeding is almost as effective as food ingestion in activating this mechanism. Failure by 13 of 106 subjects tested to demonstrate appreciable rises in serum vitamin A levels when fed a meal 2 hr. after ingestion of the test dose of vitamin A palmitate was in all cases shown to be associated with significant steatorrhea.

THE JOURNAL OF CLINICAL NUTRITION

Vol. 2, May-June, 1954

* Vitamin A in rheumatic fever. A. L. Jacobs, Z.

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A. Leitner, T. Moore, and I. M. Sharman.—p. 155.
* Absorption of iron from the gastrointestinal tract. W. J. Grace, R. K. Doig, and H. G. Wolff.—p. 162.
* Effects of vitamin E preparations on plasma tocopheral levels. R. S. Overman, J. M. McNeely, M. E. Todd, and I. S. Wright.—p. 168.
* The effect of vitamin supplementation on soldiers residing in a cold environment. Part II. Psychological, biochemical, and other measurements. R. Ryer, III, M. I. Grossman, T. E. Friedemann, W. R. Best, C. F. Consolazio, W. J. Kuhl, W. Insull, Jr., F. T. Hatch, and staff of U. S. Army Medical Nutrition Laboratory.—p. 179.
* Regulated versus free diet in the treatment of diabetes mellitus. W. S. Collens.—p. 195.
Dietotherapy: The bland diet. C. H. Robinson.—p. 206.

Vitamin A in Rheumatic Fever. Vitamin A was estimated in the blood plasma of 100 patients with rheumatic fever, and the results were averaged according to arbitrary ranges of body temperature, or according to the time after the commencement of the disease. No claim can be made either that rheumatic fever differs from other febrile diseases in its effect on vitamin A metabolism or that vitamin A is the only nutrient affected. The danger that the prolonged course of rheumatic fever may eventually exhaust the vitamin A reserves in the liver and so produce a conditioned deficiency of vitamin A should not, however, be ignored.

Iron Absorption. Iron-absorption studies were performed on a series of seven healthy persons and one subject with a gastric fistula. A small but statistically significant difference in absorption in favor of ferrous over ferric iron was found, although the authors felt that this difference would probably not be of clinical importance because it was so small. The data indicate that the absorption of iron is not necessarily related to the acidity of the stomach and that it is probably related to the absorptive capacity of the upper gastrointestinal tract.

Vitamin E Preparations on Plasma Tocopherol Levels. The amount, route of administration, and vehicle used are important in determining the effectiveness of vitamin E preparations in increasing the plasma level of free tocopherol. Repeated daily oral doses produce somewhat greater maximum increases than single oral doses. Parenteral administration of vitamin E was ineffectual in increasing the free tocopherol plasma level, regardless of the compound and type of vehicle used.

Effect of Vitamin Supplements in a Cold Climate. In a study on two groups of soldiers, one supplemented with high doses of B-complex vitamins and ascorbic acid, the following observations were made: There were no statistically significant differences between the two groups in regard to urinary nitrogen excretion, blood glucose, hemoglobin, creatinine excretion, and 17-ketosteroid excretion. Urinary and blood ascorbic acid showed the expected differences, with very high values in the supplemented group. A statistically significant increase in oxidized ascorbic acid excretion occurred in both groups during cold exposure. There was a statistically significantly greater fall in body weight and fall in eosinophil count during forced marches in the supplemented group during the experiment. A group of psychologic tests performed at intervals during the study did not reveal any differences between the two treatment groups.

Regulated vs. Free Diet in Diabetes. The disadvantages in a free, self-selected diet are seen in the complications arising from unrestricted glycosuria, hyperglycemia, hypoglycemia, and haphazard insulin dosage. It does not appear logical to abandon those dietary techniques which make possible a more scientific use of insulin.

JOURNAL OF PEDIATRICS

Vol. 45, July, 1954

* The treatment of nutritional anemia in infancy and childhood with oral iron and ascorbic acid. M. K. Gorten and J. E. Bradley.—p. 1.
* Dietary fructose in children with diabetes mellitus. A. F. Hartmann, Sr., H. J. Wohltmann, and A. F. Hartmann, Jr.—p. 27.

Treatment of Nutritional Anemia. The subject of nutritional anemia in infancy and childhood is reviewed, with emphasis on the etiology, the pathogenesis, and the mechanisms of iron metabolism involved. In twenty infants and children with severe nutritional anemia, satisfactory therapeutic results were obtained with oral iron. Other patients in this series received in addition large doses of ascorbic acid which im-

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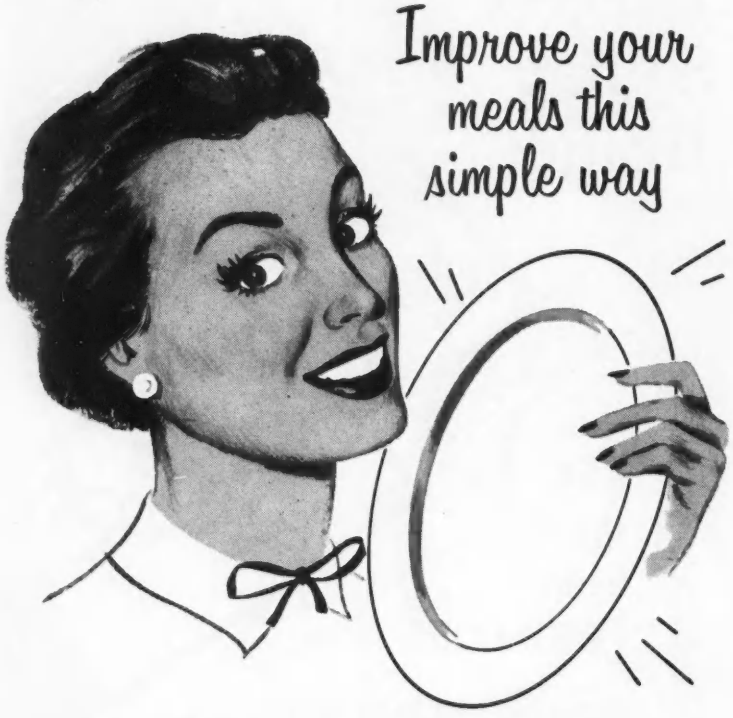
proved the response to iron therapy. The hemoglobin values were restored rapidly to a normal range in all cases. The average daily hemoglobin response in the group treated with oral iron alone was 0.205 gm.; that for the group treated with oral iron and ascorbic acid, 0.347 gm. The average length of treatment in the first group was twenty-one days, while the same results were achieved after seventeen days in the second group. It is concluded that the oral administration of iron in nutritional anemia of infancy and childhood is equally as efficacious as other types of treatment. Apparently ascorbic acid increases iron absorption and to some extent may aid the utilization of the orally given iron.

Dietary Fructose and Diabetes. To determine whether fructose feeding would influence insulin requirement in diabetes mellitus, five children with severe diabetes were studied in regard to insulin need under three interchangeable arrangements which caused the diet to vary from a standard one to (a) one which permitted fructose to furnish 25 per cent of the total calories, (b) sucrose to be substituted in equal amounts for fructose, and (c) glucose to be similarly substituted. In four of the children, despite the varying diets, insulin dosage remained constant, and for them it was concluded that fructose exerted no insulin-sparing effect. In the fifth child, what at first seemed to be an insulin-sparing effect was eventually interpreted as spontaneous improvement of tolerance often seen in the earlier stages of juvenile diabetes mellitus.



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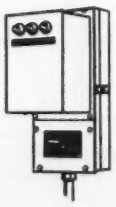

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THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 251, July 1, 1954

Intermediary metabolism. C. A. Villee.—p. 21.

Vol. 251, July 8, 1954

Intermediary metabolism (concluded). C. A. Villee.—p. 64.

Vol. 251, July 29, 1954

* Absorption of radioactive vitamin B_{12} after total gastrectomy. J. A. Halsted, M. Gasster, and E. J. Drenick.—p. 161.

Vitamin B_{12} Absorption after Gastrectomy. A method for determining intestinal absorption of vitamin B_{12} is discussed. In this method, fecal excretion of cobalt^{60}-labeled vitamin B_{12} is measured with a scintillation counter. Eleven normal persons excreted, on the average, 33 per cent of 0.5 mg. of orally administered radioactive vitamin B_{12}. Three patients with idiopathic achlorhydria averaged 34 per cent excretion of a similar dose. Average for seven patients with pernicious anemia was 93 per cent in ten tests, but when a source of intrinsic factor was administered with the test dose in four patients, fecal excretion was decreased to an average of 87 per cent. Eleven patients who had had total gastrectomy excreted, on the average, 87 per cent in sixteen tests. When a source of intrinsic factor was administered with the test dose, this figure fell to only 20 per cent for fourteen tests. None of the patients who had had total gastrectomy had macrocytic anemia, 10 were significantly underweight, 7 had a normocytic anemia, 10 had steatorrhea, and 9 had received therapy to prevent macrocytic anemia. Evidence is presented that the site of origin of intrinsic factor in man is limited to the stomach.

NEW ZEALAND MEDICAL JOURNAL

Vol. 53, April, 1954

* Some considerations of nutrition in general practice. G. G. Duncan.—p. 109.
* Food poisoning outbreaks in an institution. D. Taylor.—p. 137.

Nutrition in General Practice. The author, in delivering the Annie B. Cunning Lecture of the Royal Australasian College of Physicians, focuses on shortcomings in the application of established principles of nutrition. He points out the fallacy, still widespread, that excess protein is injurious to apparently normal kidneys, and emphasizes that protein should not be restricted in treating cardiovascular renal disease, chronic disease of the liver, during pregnancy, and in pre- and postoperative surgical patients. A recent survey of food intake by hospital patients on the medical, surgical, and obstetric and gynecologic services indicated that protein intake in particular is inadequate for the stress conditions of illness. Care should be taken that protein intake is adequate, especially when low-sodium diets are ordered, for salt restriction seems to engender low-protein intake, according to this survey. Adequate pro-

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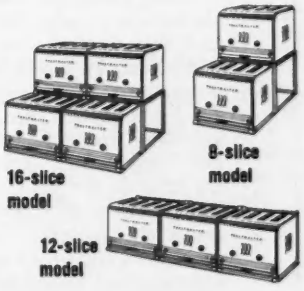

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tein intake is also important in treating patients with decubitus ulcers, ulcers, and visceroptosis. In the latter condition, which is caused originally by malnutrition, management recommended includes hospitalization, a high-protein (120 to 150 gm.) diet, elevation of the foot of the bed, and exercises. The clinical picture improves with the gain in weight. In discussing obesity and reducing programs, the author points out the greater appetite-satisfying power of protein as compared with fat and carbohydrate. The relationship between obesity and diabetes is discussed.

Food Poisoning in an Institution. In a New Zealand institution, three repeated outbreaks of food poisoning occurred which affected both patients and personnel. Investigation showed the cause to be the use of raw milk produced by the institution's own herd. Pasteurization of milk and cream was ordered, and the outbreaks were stopped. The use of pasteurized milk is recommended wherever possible.

NUTRITION ABSTRACTS AND REVIEWS

Vol. 24, April, 1954

- Secular change in the height of British adults. A. W. Boyne and I. Leitch.—p. 255.

Change in the Height of British Adults. The paper states that in Britain, information is inadequate to show directly by comparing different series of records whether the mean maximum stature of the population has increased over the last 100 years. It appears that the age at which mean maximum height is attained has moved forward, but neither the details of the age-shift nor the heights attained can be assessed with any accuracy. Data from Sweden and Denmark support the view that maximum height may have increased with improved social conditions. It is suggested that a routine of surveys is needed to know what changes are taking place in the physique of the nation.

NUTRITION REVIEWS

Vol. 12, August, 1954

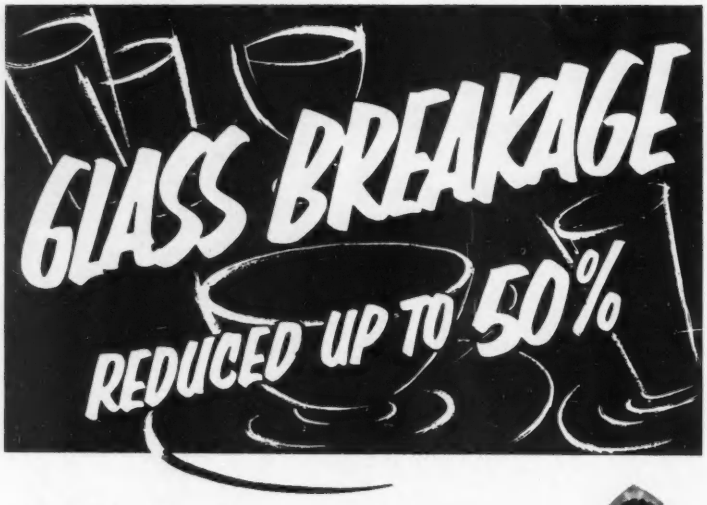
- The folic acid story—reminiscences. W. H. Peterson.—p. 225.
- Cholesterol synthesis in man.—p. 230.
- Dental decay and carbohydrates.—p. 233.
- Nutrition and behavior.—p. 237.

History of Folic Acid. The author describes the many steps involved in the research that led to the discovery of folic acid. He outlines briefly his own work and that of many other scientists who participated.

Cholesterol Synthesis in Man. Information on this subject is of great theoretic interest as well as important in elucidating the relative value of ingested cholesterol and its synthesis in the body in the development of arteriosclerosis. In the experiment described, cholesterol, both free and in ester form, in the plasma was synthesized in man from orally administered C^{14}-labeled sodium acetate, approximately 3 per cent of the administered acetate being incorporated.

Dental Decay and Carbohydrates. The data point to the greater importance of the physical form in which sugars are ingested than the total amount consumed. These data also emphasize the real importance of the several constitutional factors which determine caries-susceptibility and the difficulty with which these factors are overruled by unfavorable oral environmental circumstances.

Nutrition and Behavior. The relations between diet, emotions, and behavior are complex, including food habits, symbolic values attached to food and eating, and motivated perception, as well as changes in physical fitness, mental alertness, and personality which result from deficiencies of certain nutrients. Although investigations thus far have been limited largely to the "Western" world, a fertile field of study may lie elsewhere—in Africa, Asia, and parts of South America. In discussing kwashiorkor, one report states that mental changes (apathy and dullness) are consistent and important features of the disease. Another African study indicated a difference in alertness between tribes, the more alert being a fish-eating group while the tribe with less ability to concentrate ate largely a millet diet. An approach combining the techniques of the social sciences—anthropology, sociology, and psychology—with that of medicine and nutrition is suggested in studying such phenomena. A French



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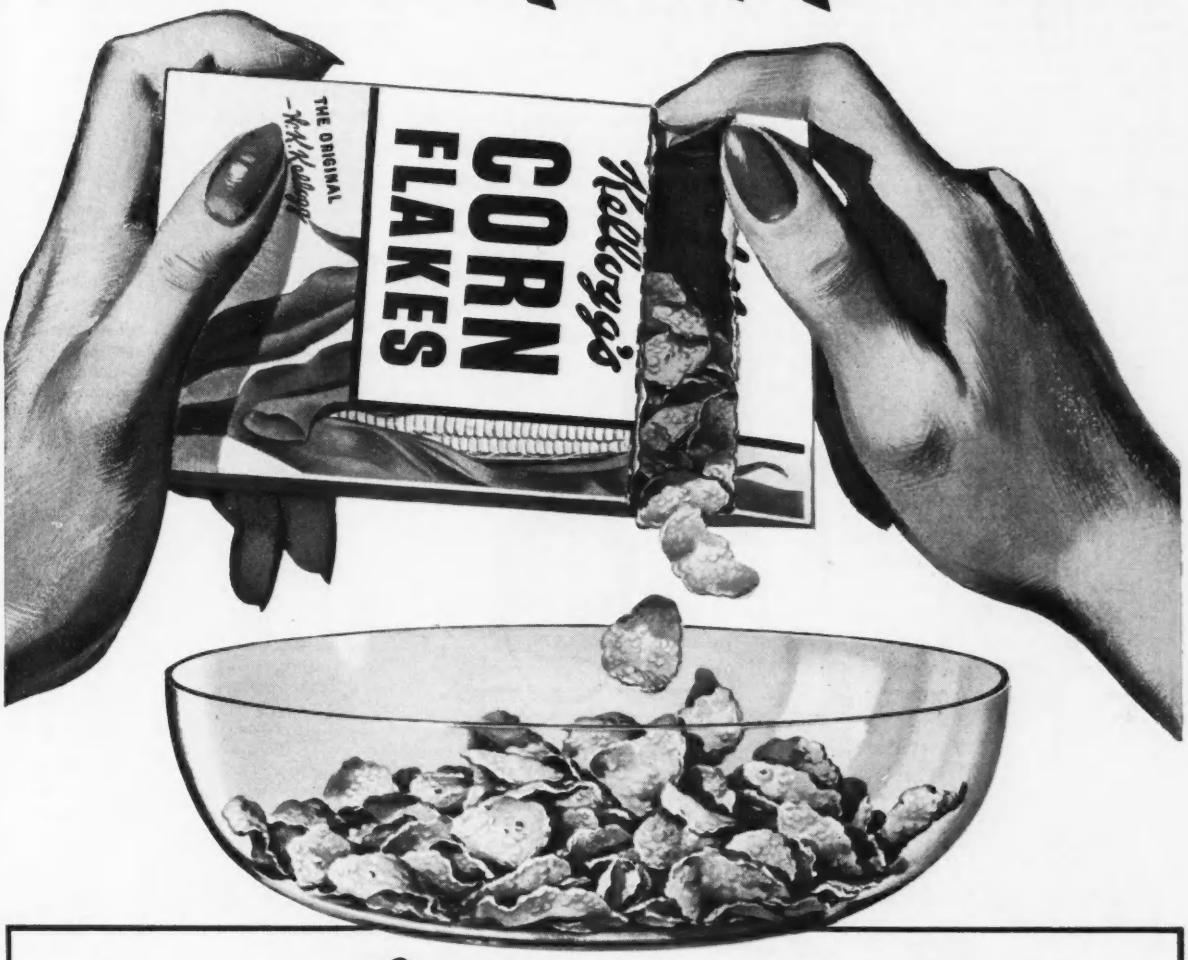

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scientist has pointed out that nutritional deficiencies affect principally the emotional tone and personality while intellective functions appear much more resistant to deterioration. The psychopathology of hunger, too, is interesting. Severe inanition may simulate psychotic symptoms which are reversible by adequate diet. In disease, psychologic factors connected with food may in the future influence postoperative diets. Patients deprived of food because of organic disease or surgery may develop psychologic reactions which in turn aggravate the disease or paralyze the wish to live. Perceptual behavior also appears to be influenced by the length of time of food deprivation. The practical implications of these facts would lead one to expect more intensive research in this field that can actually be documented. Progress in the study of the gross and more subtle impacts of diet on man's mind and behavior is one of the most intriguing developments in the science of nutrition.

PUBLIC HEALTH REPORTS

Vol. 69, July, 1954

* Effect of fluoride in drinking water on the osseous development of the hand and wrist in children. H. B. McCauley and F. J. McClure.—p. 671.

Effect of Fluoride on Skeletal Formation. Exposure to fluoride in drinking water was studied for evidence of detrimental effects on skeletal calcification and bone development in children. No evidence, available by radiograph, was obtained which would indicate that there was any adverse effect on the carpal bones or on their growth and development as a consequence of the continuous use of drinking water containing approximately 3.5 to 6.2 p.p.m. fluoride.

THE ROYAL SANITARY INSTITUTE JOURNAL

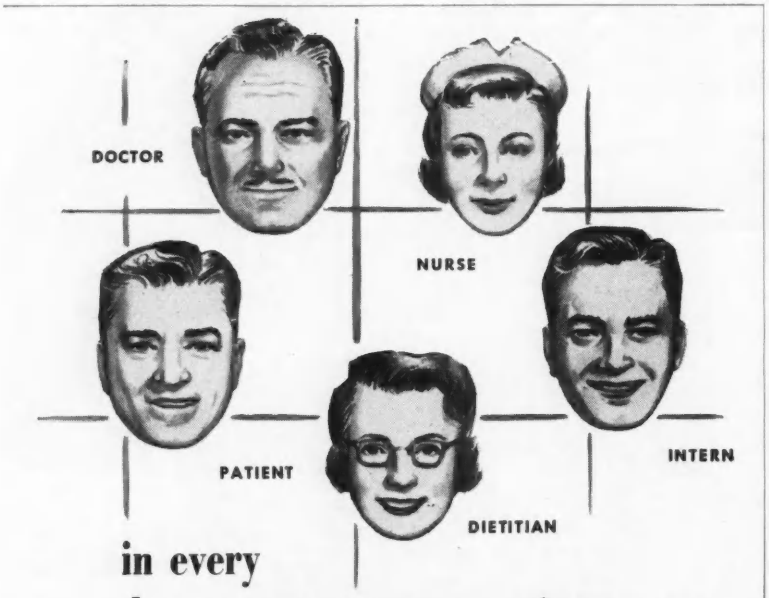
Vol. 74, July, 1954

* Food hygiene and food preparation in the home and kitchen:
  - (a) Some factors affecting the structure of the kitchen and larder. J. B. M. Coppock.—p. 550.
  - (b) The handling and storage of food materials. E. Washington.—p. 557.
  - (d) Faulty cooking as a factor in nutrition. B. R. Stanton.—p. 575.

Sanitation in the Kitchen and Pantry. This symposium considers the hygienic preparation of food on a domestic scale. It involves a discussion of structural materials that can be used to the best advantage in building and furnishing the kitchen and food storage rooms. Since kitchens vary in different types of households, the article considers a kitchen where one, possibly two, persons are preparing the food for a small number of people. It gives constructive suggestions for the building and maintenance of floors, walls, ceilings, and ventilation.

Handling and Storage of Foods. The article discusses how food is affected by the treatment it receives in the home. Although attention is often given to the effects of preparation and cooking, little attention is devoted to the effects of food during the lapse of time which may occur between its purchase and its use. In the case of perishable food, this lapse of time will be only a few days, but for non-perishables, it may be months or years. Storage of food may affect nutritive value, flavor, or palatability, as well as its safety for human consumption. The handling and storage of food falls into three stages: (a) transport from shops to home; (b) storage prior to preparation; and (c) storage of prepared foods and "leftovers." Contamination of foods, loss of nutritive values, and facilities for storage are described and discussed.

Faulty Cooking as a Factor in Nutrition. Because nutritive values are secondary to the eye and palate appeal of a dish, a housewife cooking the family meal will consider primarily her family's enjoyment of the meal. It is helpful, however, to cook with somewhat of a scientific approach so that some of the nutritive values of prepared food are retained. This article discusses the losses sustained in domestic cookery, but points out that the standards employed in cooking depend on the cook's opinion and taste and, therefore, scientific standards cannot be exact and must be regarded as generalities. The article discusses cooking losses in meat, fish, eggs, milk and cheese, vegetables, and fruits.



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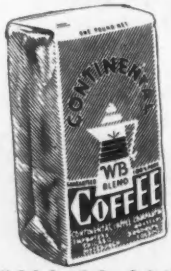

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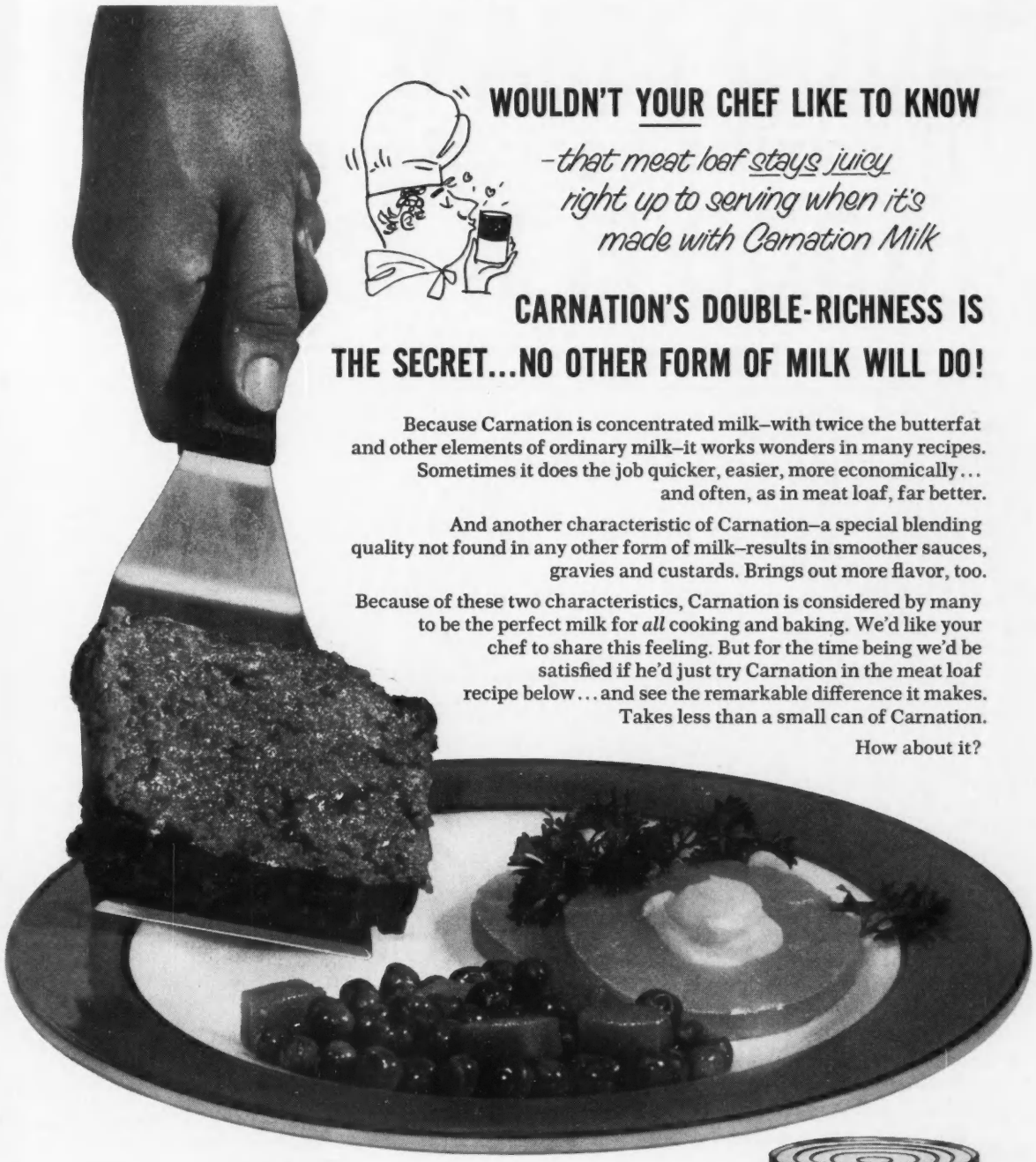

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- ¼ cup chopped green pepper

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SCIENCE

Vol. 20, July 30, 1954

* Animal species that feed mankind: The role of nutrition. L. A. Maynard.—p. 164.
* Growth, food utilization, and thyroid activity in the albino rat as a function of extra handling. W. R. Ruegamer, L. Bernstein, and J. D. Benjamin.—p. 184.

Vol. 120, August 20, 1950

* Influence of vitamins upon incidence of tumors in tu[sol] stock of *D. melanogaster*. S. Mittler.—p. 314

Animal Species that Feed Mankind. It is important to understand how improved feeding practices for animals can contribute to the better nutrition of our increasing population. Insofar as animals consume food that might be eaten by man or products obtained from land that could be used to produce food for man, there is a great waste of food resources as measured in calories. About 20 per cent of the gross energy (calories) fed to a pig, the most efficient converter among farm animals, is returned in edible products for man's use. The dairy cow is three-quarters as efficient as the pig, and other animals rank much lower. For steers and lambs, the conversion figure is only about 4 per cent. Recent research, especially that dealing with the discovery of new vitamins, has served to emphasize the importance of the nutrients for which animal products are rich sources. As a supplement to the cereal diets that comprise 90 per cent or more of the total food of the majority of the world's population, animal products have a special importance. Various species differ in the efficiency of production of nutrients per gross calorie of feed consumed. Pigs, dairy cows, laying hens, and broilers are much more efficient in protein production than are steers or lambs. The dairy cow produces ten times as much calcium as does its nearest competitor, the hen, and also ranks ahead of all others in riboflavin production. The hen ranks first in vitamin A production, followed by the dairy cow, while the other species do not produce significant amounts. The pig ranks first in thiamine, the broiler in niacin. All species are more efficient than they were a decade ago, because of the application of the findings of nutrition research. The latest development in the feeding of pigs and chickens has resulted from the finding that antibiotics in small amounts are growth factors for these species. This research is enabling animals to draw more and more on feed resources not suitable for man's direct use, as well as increasing the feed efficiency of animal production. The idea has been promoted by some popular writers and others that feeds from poor soils, whether forage or concentrates, result in the production of milk, meat, and eggs of poor nutritional quality. In general, this is not true. Feeds that are inadequate in amount or quality affect the yield, and not the quality, of the product. There are some exceptions to this general statement, notably the vitamin A value of eggs and milk, but it should be emphasized that the contributions of better animal feeding practices to man's nutrition lie primarily in increasing yields of the products.

Relation of Petting to Growth in Animals. Increased growth and better utilization of food was observed for "extra-handled" (petted) animals. Both the control and experimental animals received the same diet, *ad libitum*. There was no statistical difference in the amounts of food consumed by both groups, indicating that the superior growth was due to superior food utilization rather than greater quantities of food consumed. The petted animals were more active and curious, whereas the unhandled rats were lethargic. These findings were essentially the same, regardless of whether littermates were used or different species. Also, differences in housing, i.e., individual cages or group caging, made no substantial difference in results. There was increased thyroid activity on the part of the unhandled animals; whether or not this is a function of differences in anxiety level, this may be an important mediating factor in the production of the observed differences in growth and food utilization.

Vitamins and Tumors in Flies. Fly larvae were nourished on a vitamin-free and amino acid-free medium inoculated with yeast *H. anomala*. Thus nourishment was restricted to the yeast

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employed. Excessive amounts of various vitamins were added to this medium and the incidence of tumors recorded. Only 10.6 per cent of the flies reared on the minimal diet developed tumors, while there were significant increases in tumor incidence in those reared on an excessive amount of riboflavin, niacin, pyridoxine, vitamin B_{12}, and para-aminobenzoic acid. In the case of vitamin B_{12}, the incidence was almost doubled. It has previously been shown that an excess of amino acids in the diet increased tumor incidence in this tumor-susceptible stock. The results raise some interesting questions: How do vitamins influence tumor production? Why does an excess of vitamin B_{12} double the tumor incidence?

ADULT LEADERSHIP

Vol. 3, June, 1954

* Human values in the workshop technique. E. C. Kelly. —p. 4.

Workshop Technique. Today's workshop is a place where people work together to do things for themselves. It is a meeting of people in small groups which gives everyone present an opportunity to participate, not just listen. Heretofore, the article states, participants "felt like empty containers to be filled" with the ideas of lecture-teachers. The problems to be studied should be set up after the group gathers, and not in advance, since the purpose of the workshop is specifically to prevent the "lecture" type meeting in which those present have nothing to do or to say about what was learned. The workshop is very popular because it gives each individual a chance to express himself about his own particular job problems. It is said that people become more adequate in their relations with others, and through this system, gain faith in fellow-employees as they work together.

AMERICAN RESTAURANT MAGAZINE

Vol. 38, August, 1954

* Extra appeal produces extra satisfaction. I. L. Dolan.—p. 48.

Appeal with Olives. An "extra touch" which makes a meal look better and taste better is achieved with the use of ripe olives. This unique fruit comes in four varieties and in nine sizes, ranging from "Small," averaging 135 to a pound, to "Super-Colossal," with 32 or less to a pound. This article contains recipes and ideas on how to use olives in meals and canapes.

FOOD ENGINEERING

Vol. 26, August, 1954

* New edible dessert cups baked flat, die-formed. FE Staff.—p. 64.
* Better frozen fruits with new corn syrup solids. P. E. Gilbert.—p. 125.
* Continuous enrichment of peanut butter with vitamin A. R. K. Willich and A. F. Freeman. —p. 129.
* Meat fat improves frozen dessert. M. E. Hull. —p. 133.

Edible Dessert Cups. A Seattle company has developed a process to make edible dessert cups, which are on the same order as ice-cream cones. The cups are made on an automatic machine resembling a large waffle iron. Twenty-seven cups a minute are turned out. Cups for institutional trade are packed 288 to a cardboard carton or 341 to a 50-lb. can. When intended for retail stores, they are packaged eight to a Cellophane box bearing the trade name.

Better Frozen Fruits. This article discusses experiments made with a granular corn sirup solid. The following benefits were found when fresh fruit was capped with the compound before freezing: (a) prevention of oxidation of fruit during thawing and prior to subsequent use; (b) production of preserves with flavor, color, and texture superior to those made from 4 + 1 sucrose packs; and (c) a saving of approximately 10 per cent in container, storage, handling, and freight costs. Although packers of bulk frozen fruits long have been aware that packing fruits with liquid corn sirup made the fruit retain a bright color, fresh flavor, turgid texture, and high drained weight, sucrose is largely used because of its ease in handling. The development of this corn sirup solid in a granular form has proved to be much more effective, and it is almost as easy to handle as the sucrose.

Vitamin A in Peanut Butter. Putting Vitamin A in peanut butter is desirable because peanut butter often substitutes for butter and margarine, both of which contain substantial quantities of vitamin A. Because peanut

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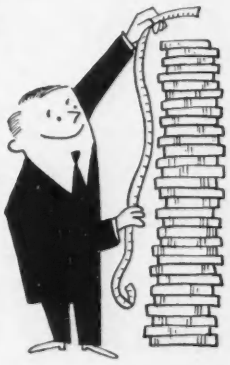

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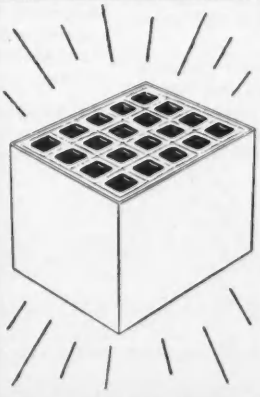

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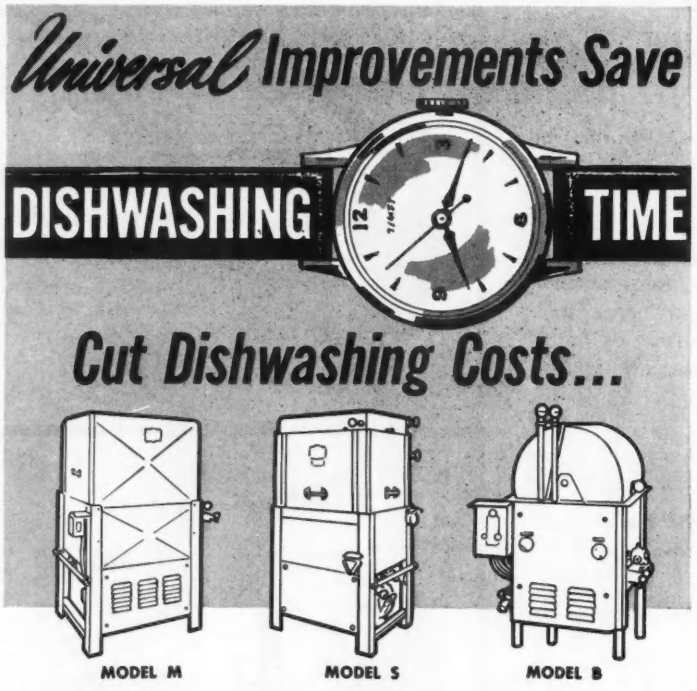
PC's are packed 20 to a tray—10 trays to a carton. They're readily accessible . . . will store compactly in a minimum of space.

butter has a high oil content and good keeping properties, it serves as an excellent carrier of vitamin A. This article explains the experiments and the results of a project to incorporate vitamin A in peanut butter which was carried out by the Southern Regional Research Laboratory in New Orleans.

Meat Fat in Frozen Dessert. One major producer of both meat and vegetable fats has become interested in using meat fat in the frozen dessert. To date, most of the non-butterfat desserts have used vegetable oils, but through a specially developed test and taste panel, a fat was pinpointed that not only produced a highly acceptable product by regular commercial routine, but also offered positive resistance to churning-out during freezing, which is a problem with other fats. In the test, oil was tasted by trained tasters who scored it against a control sample of mineral oil, and then the fat was emulsified into skim milk to make a 10 per cent fat mixture for another flavor test. A trained taste panel was asked to rate the samples of the emulsified product on the basis of a ten-point grading system; then an average grade was taken. The fats were tested at various percentages and graded for flavor, body, texture, over-run or emulsification properties, melt-down, and shrinkage. It was found that both vegetable and meat fats can be used successfully and are now being sold commercially.



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FOOD PROCESSING

Vol. 15, July, 1954

* Major five-year program to study radiation sterilization.—p. 6.

Food Preservation by Radiation. A five-year program involving the study of sterilization of foods by radiation is being formed by the Army Quartermaster Corps. Participating in the study will be the Atomic Energy Commission, Armed Forces, and other governmental agencies, educational and industrial institutions, and a special committee of the National Research Council. The program will replace individual studies now being conducted in this field. Foods preserved by this method could ultimately cause radical changes in the processing, packaging, and refrigerating of foods. Contracts with seven institutions are being made to study different phases of the problem, including the radiation effects on color, flavor, and composition of sixty different foods. Both gamma and beta particles are being studied, and experiments show that the former can effectively penetrate through 12 in. of water, a No. 10 can, and a beef carcass. The Office of the Surgeon General of the Army will collaborate on subjects relating to toxicity and nutrition to be certain foods are fit for human consumption.

FOOD SERVICE

July, 1954

* Salable sandwiches. J. Englund.—p. 17.

Sandwiches. To attract today's hurried customer, sandwiches must be good food. Simple, well chosen electrical equipment will facilitate preparation of both hot and cold sandwiches. A good sandwich menu consists of regular standbys plus two or more sandwiches offered singly or in combination with soups and salads. Variety may be obtained by garnishes, different breads, and new twists of service. Three pages of quantity recipes are given, while pictures include garnishes and quick but attractive methods of cutting sandwiches.

FOUNTAIN LUNCHEONETTE AND DINER

Vol. 1, June, 1954

* Recommended coffee brewing methods with vacuum type equipment.—p. 18.

Good Coffee with Vacuum-Type Equipment. Following the Coffee Brewing Institute's report in the previous issue on recommended urn brewing methods is this list of eight steps on how to make good coffee with vacuum coffee makers.

HOSPITAL MANAGEMENT

Vol. 78, July, 1954

How to give eye and taste appeal to bread products. D. R. York.—p. 74.

HOSPITALS

Vol. 28, August, 1954

* Good food service doesn't just happen! R. Stief.—p. 71.
* The accurate meal count. B. Elsholz.—p. 128.

Father-Son Hotel Team Thrives on a Commonsense Approach to Boontonware

The Downes, father and son hotel team, after six years' experience with Boontonware, say this:

"You can always come out on top with Boontonware if you don't overdo the miracle of Melmac. Boontonware may never break. But after long hard use, it will start to show its age, like anything else.

"At that point, however, it has already outlasted ordinary dinnerware at least three times. By then we are glad to replace the worn pieces with new. This way, we preserve the original beauty of the installation for the customer, and still stay way ahead of the game from a cost-of-operation standpoint."

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Son Richard T. Downes shows how he feels about this by making a switch to Boontonware one of his first moves as Resident Manager of The Poughkeepsie Inn.

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Hospital Food Service Today. The only real reason for a dietary service is the welfare of the patient. The dietary service looks to the science of nutrition for foods that are important for health and the modifications of diet that are useful in treating disease. Food preparation is of vital importance. Hand-in-hand with nutrition and food preparation goes an understanding of human behavior. The dietary service is one of the most potent factors in a hospital's public relations—in fact, it can make or break the hospital's public relations program. One avenue of satisfying patients seems to be the selective menu, five advantages for which are listed. Developments in food technology have made possible better food service, too, i.e., frozen foods, dehydrated foods, and prefabricated meats. The administrative functions of a hospital dietary service involve the serving of appetizing and nourishing meals as economically and efficiently as possible to patients and personnel. Administrative problems, such as cost controls, hidden costs, construction, and training programs, are cited and discussed as they are affecting present-day hospital dietary service. The value of the consulting dietitian and the "shared" dietitian, and "news letters" for small hospitals is also mentioned.

Accurate Meal Count. Without accurate accounting of meals served, food cost studies do not reveal the true facts. The American Hospital Association's *Manual on Food Cost Accounting* suggests the use of a monthly meal census sheet for posting meals daily. Appropriate columns are provided for recording routine and special diets for patients, personnel, and the total meals served "today" and accumulated "to date." If trays from patients are served directly from the kitchen, a count of trays served for each meal is recorded. If the food is served from the floor serving kitchens, the nurse or person responsible for the service provides the dietitian with the information. The disadvantages of figuring meal count from the patient census or from the bed capacity of the hospital are outlined. Infant formulas and between-meal nourishments should not be considered in computing the meal census. Meals served to personnel may be obtained by plate count, by the use of a mechanical counter, or from a sheet on which the personnel sign for meals. The need for accurate determination of the cost of the food used as distinguished from foods purchased is discussed as well as the cost of labor.

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THE HOTEL MONTHLY

Vol. 62, August, 1954

* How one kitchen range does the work of two. P. Jones.—p. 55.

New Method of Roasting Turkeys. A hotel manager discusses kitchen efficiency. Congestion, or over-crowding, of range facilities during peak periods is one of the greatest efficiency problems of the hotel kitchen. There are several ways of solving this problem, among them being to add more ranges, which adds extra expense and requires more kitchen personnel. Another solution would be to arrange the menu, so that less cooking facilities are required. The hotel discussed in this article used the principles of cooking efficiency in roasting turkey, which, although one of the hotel's most popular and profitable food choices, took up a great deal of oven space to prepare. The hotel experimented with boning out, or sectioning, the turkeys before roasting. With the turkey reduced to this state, it was possible to roast at least two and sometimes three turkeys in one pan. The results of the experiment were: (a) roasting took less time; (b) required oven space was reduced; and (c) there was less waste and shrinkage. In all, this experiment was very successful and profitable and is now a regular practice of the hotel kitchen.

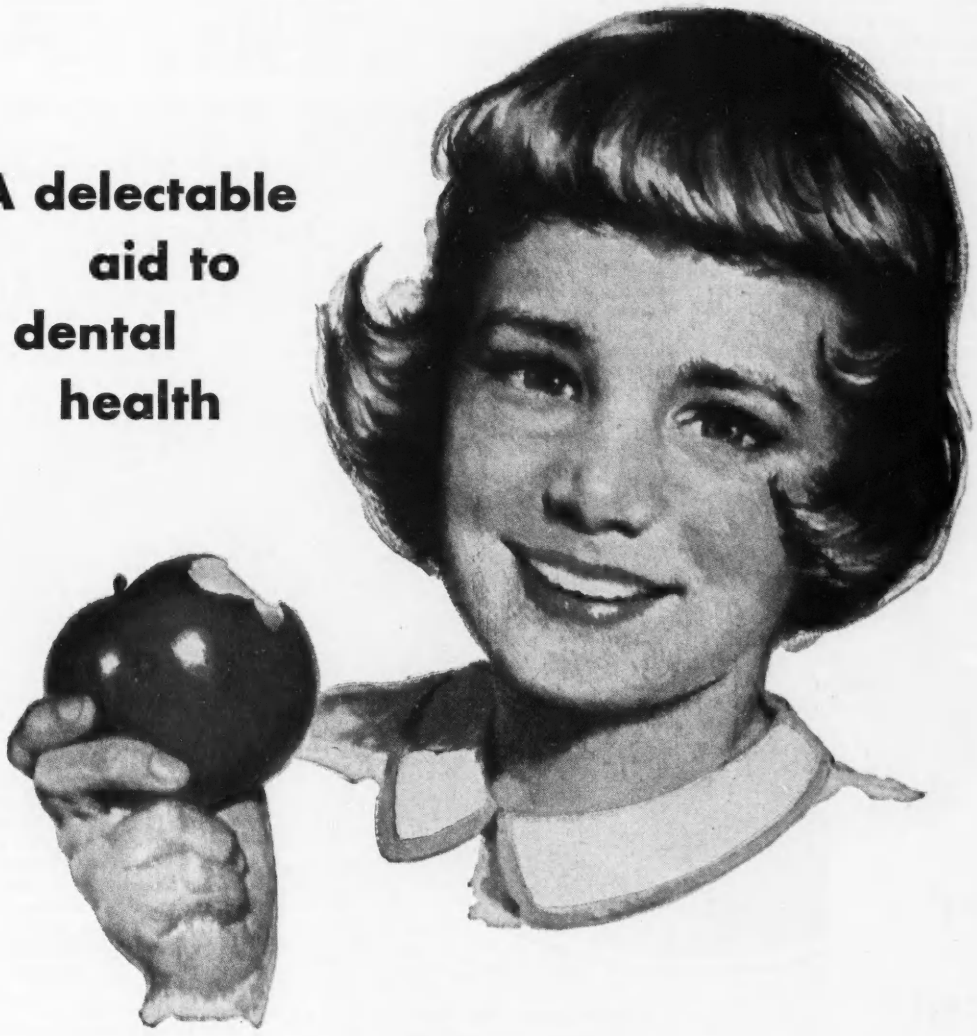
INSTITUTIONAL FEEDING AND HOUSING

Vol. 3, August, 1954

* Around the clock menu planning. D. Chapp.—p. FH2.
* How to reduce dish breakage and wear.—p. FH4.

How to Plan Around-the-Clock Feeding. This article deals with the problems of the around-the-clock feeding operation at the Cook County School of Nursing in Chicago. The school operates under the Board of Commissioners to supply nursing service

A delectable aid to dental health



Today's diet, often soft and containing relatively large amounts of carbohydrates, poses a constant threat to teeth and gingivae. A fresh juicy apple after meals is a tasty aid to conservation of dental health. The apple is a succulent cleanser, highly efficacious, convenient and enjoyable. Its firm chewable texture gives needed massage to flabby gums. Its delicate aroma and lively flavor stimulate the salivary glands to copious secretion. These benefits are provided through regular everyday eating of apples.

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in the Cook County Hospital. Its kitchen service, which operates 24 hr. a day, seven days a week, supplies the hospital nurses, the student nurses, kitchen help, janitors, painters, laundry workers, housekeepers, office personnel, and social workers with three meals a day. The staff of three dietitians plans the meals three weeks in advance and, with careful and economical buying, keeps the cost of the operation to a minimum. The article contains a complete weekly menu, which shows that the dietitians not only plan well balanced meals, but meals with variety and appeal at a low price to the hundreds who use the cafeteria daily.

Dish Breakage. Helpful suggestions on how to reduce dish breakage and wear are found in this article. A recent survey showed that china replacement alone in the average restaurant costs from 0.5 to 1 per cent of the total food sales, and 11.5 per cent of the cost of dishwashing and handling. Although this is only a small part of the operating expenses of a restaurant, it can be reduced. One way is to show employees how their efficiency has a direct relation to profit or loss. A reward or bonus program, in preference to a penalty program where the employee is fined for breakage, makes the employee feel that he is getting his share of the savings. The use of display boards or diagrams showing the cost of breakage keeps the problem in the minds of the employees and makes them more aware of their responsibility. The article has a "Breakage Control Check List" which contains many useful suggestions on how to cut down on this inevitable restaurant cost.

Good News for Dieters...

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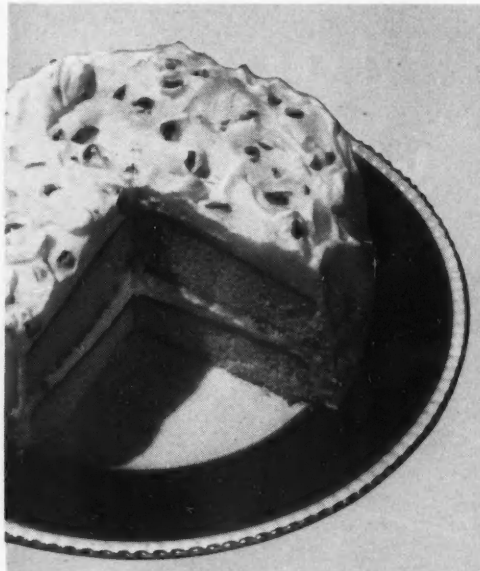

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INSTITUTIONS MAGAZINE

Vol. 35, August, 1954

* Techniques of freezing prepared and precooked foods. A. M. Macfarlane.—p. 26.
* Meat tenderizing can vary cost menus. A. Avery. —p. 32.
* Coordination necessary for in-service sanitation plans. W. H. Haskell.—p. 42.
* Preventive plans give positive sanitation lead. C. L. Senn.—p. 88.
* Standards for food preparation areas. R. R. Marsh.—p. 97.

Freezing Prepared and Precooked Foods. This is one of a series of articles on the freezing of prepared and precooked foods. Since this handling of foods is a fairly new industry, constant research is needed concerning the cooking, freezing, storage, and recooking of the foods. If frozen correctly, these foods have proved to be of as high a quality and taste as food that is not frozen. An added advantage of frozen prepared and precooked foods is that they cut down over- and under-production for the operator, which in turn gives an excellent control over cost and material. The article gives lists of general suggestions for preparing and precooking foods for freezing and also of useful references.

Meat Tenderizing. An operator can reduce his meat costs, serve a greater variety of meat dishes, make complaints about "tough" meat disappear, and shorten his cooking time by investing in a meat tenderizer. This article shows how a meat tenderizer saves the operator money. Included also are suggestions on what to look for when buying a tenderizer and precautions to take in using such equipment. The suggestions will be especially helpful to those who serve inexpensive cuts of meat.

Coordination Necessary for In-Service Sanitation Plans. During the past ten years, there has been an ever-increasing interest in sanitation on the part of those industrial concerns engaged in supplying food, equipment, and supplies. Reports from many sections of the country show that there is a greatly increased interest in a wider application of education in sanitation. However, our educational organizations—colleges, universities, high schools and, in particular, our directors of instruction—have shown little interest in the inclusion of sanitation instruction in their prescribed courses. Most of the instruction in the past has ended in failure, mainly because of incompetent instructors. Also, there is no coordination between the different industries and agencies, which need and would greatly benefit from such education. This article makes suggestions for both nation- and state-wide sanitation education programs, how they could be organized, and what agencies and associations should be involved. The article is one of a proposed series.

Preventive Sanitation Plans. This article is the conclusion of two parts on

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a sanitation program. It deals with sanitary equipment, its installation, maintenance, and operation; the handling of food and the personal cleanliness of those working in the food preparation area; and an over-all evaluation of the sanitation program. There is emphasis on the proper training of those dealing with food and equipment and how a supervisor can carry through on such a training plan.

Standards for Food Preparation Areas. Whether a food service operation is large or small and has either a minimum or maximum amount of equipment, it has the problem of setting up and enforcing routines and rules that will insure proper sanitation. This article deals with four principal factors in sanitary food preparation: (a) the care of equipment and utensils; (b) the handling of them and the foods by the kitchen personnel; (c) the maintenance of proper refrigeration for prepared foods and leftovers; and (d) the conditions under which the food is served. The dangers of, reasons for, and preventions of bacterial poisoning are discussed in detail, and many helpful suggestions for the protection of operators and their customers are given.

THE MODERN HOSPITAL

Vol. 83, August, 1954

* Training food service employes. M. Dykes.—p. 106.

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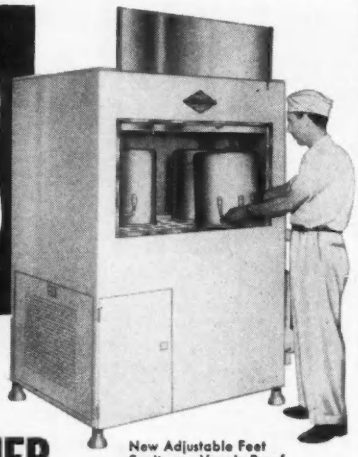

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Training Employees for the Small Hospital. This article discusses the need for trained dietary employees for the small hospital. One of the greatest problems connected with the severe shortage of qualified dietitians is that many of the small hospitals in the country are financially unable to employ a professional dietitian. In many such cases, the problem could be solved by employing a food supervisor who would be held responsible for, and who could plan, the diet under the guidance of the hospital administrator. The University of Georgia has planned a college course which will train food service supervisors and directors for small hospitals. The course, open to high school graduates, consists of three quarters of regular college work followed by three months' practical experience in selected hospitals. This article discusses the importance of such a course and of setting up dietary departments in new hospitals to correspond with it. There are several examples and illustrations on how this can be done. The supervisor should start with a good plan of organization, which includes establishing personnel policies, making job analyses to determine the number of employees needed and what their work schedules and duties should be, setting up rules and regulations for personnel, and policies for the hiring of new employees. Helpful suggestions and effective methods of keeping a dietary department operating smoothly and maintaining good employee relationships within the dietary department are also discussed.

PERSONNEL JOURNAL

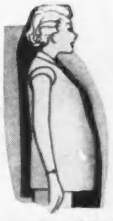
Vol. 33, July–August, 1954

* Employee turnover is costly. F. M. Disney.—p. 97.
* How we stimulated our executives' growth. V. E. Clark.—p. 101.

Employee Turnover Is Costly. The Personnel and Administration Planning Director of the Housing Authority of Baltimore City presents a study of employee turnover during the last six months of 1953. The entire central office staff and all housing managers and field supervisors made a careful study and kept records of the turnover in their departments. The reports answered these questions: (a) How much does turnover cost us? (b) What causes turnover? (c) What could we do to reduce it? The organization classified employees as administrative, clerical, and maintenance and found that costs of training a new employee in one of these classifications averaged $145 plus valuable time spent by other employees and supervisors. Reports proved turnover cannot be reduced by a raise within six months, but that the fault lies in working conditions or dissatisfaction with supervisors and co-workers—and, in a number of instances, the causes of resignation were poor supervisory practices.

Stimulating Executives' Growth. An Army arsenal in California gave a thirty-week executive development program with night instruction to some of its service and civilian employees. Out of seventy-five officers and civilians

needed extra protein the patient will enjoy



Protenum—the pleasant-tasting protein diet supplement—is a pleasure to prescribe because patients find that it is a pleasure to take.

Delicious Protenum, with its chocolate flavor, is highly acceptable to patients of all ages, with meals or between meals. The finicky child, the convalescent, the pregnant woman, the geriatric patient—all welcome Protenum. Patients on therapeutic diets find that Protenum is an exceptionally easy way to ingest extra protein.

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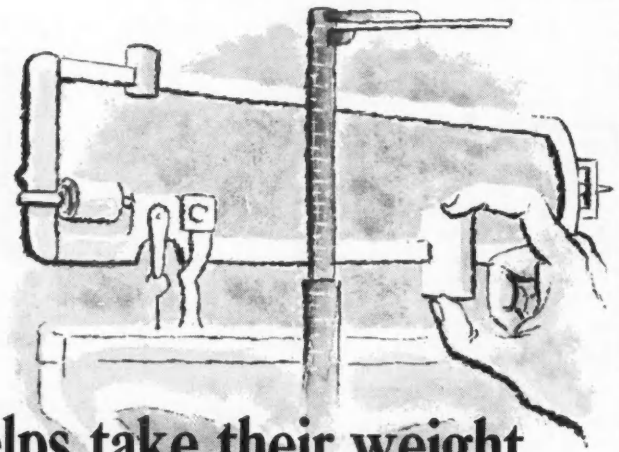

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invited to attend the classes, sixty accepted and participated actively in the course. Skill in handling human relations and administration was the aim of the program. After preliminary lectures, small instruction groups were organized to discuss human relations and administration problems. As a result of the studies, the participants took more interest in problems presented to them and, instead of using rash judgment and snap decisions in finding solutions to their problems, thought their decisions out carefully and came to rational answers.

RESTAURANT MANAGEMENT

Vol. 75, July, 1954
*40 sandwich combinations. A. Easton.—p. 32.
Installing a self-service take-home department. A. W. Dana.—p. 42.
*Analyzing your food cost percentage. J. E. McNamara.—p. 45.
Vol. 75, August, 1954
* Streamlining your banquet service. A. W. Dana. —p. 42.
* Analyzing your food cost percentage. M. Burritt. —p. 44.

Forty Sandwich Combinations. The most popular single food consumed in this country is the sandwich. This article first discusses the need for proper tools in sandwich making, quality of bread, cleanliness, flavor, portions, and attractive service, followed by forty combinations including ten soup-and-sandwich, ten sandwich-and-beverage, ten salad-and-sandwich, and ten sandwich-and-dessert combinations. Attractive illustrations are used.

Food Cost. This article is the seventh in a series on how to cut restaurant expenses and is entitled "Menu and Price Considerations." Establishing a profitable food cost level is one of the first considerations. Hints are given on how to do this. Examples are cited of how profits can be made from high-cost items, how volume relates to profits, and how labor affects food costs. Menu pricing, portion sizes, and controlling unused prepared food are also discussed.

Banquet Service. This article contains helpful suggestions on serving banquets and preparing and storing banquet foods. An illustrated diagram describes the most efficient methods of serving banquets. The article also describes how portable warmers are used and tells how they can speed up the banquet service.

Restaurant Payroll Ratios. In many restaurants payroll costs have become an even greater problem than food costs. Whether a restaurant is large or small, its payroll can be either high or low in relationship to its sales. The operator, in order to keep his payroll low, must apply a little science. This article shows how he can categorize his payroll according to labor cost for: preparation, service, cleaning, and administrative work. This is the eighth in a series of articles on how to cut restaurant expenses. It contains a table of payroll ratios of eight typical restaurants and a chart of a restaurant's labor costs for two weeks, with explanations on how the costs can be cut.

Use the appeal of a beautiful color in your coffee service. Clear, brilliant Hall underglaze colors, fused with body and glaze by our single-fire process, will not fade or wear away. Your choice of color is available in all Hall China . . . casseroles, baking dishes, coffee and teapots, creamers, jugs, ash trays, and many other items. Write for color chart.

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News Notes

Statistics on Dietitians. Section 5 of the Public Health Service's series of reports, *Health Manpower Source Book*, titled "Industry and Occupation Data" is now available. In it are presented figures taken from the 1950 Census on workers classified as to the two health service industries which the Census recognizes: hospitals, and health services excluding hospitals. This publication includes data on the occupation, class of worker, and sex of persons in each of these industries—information never before available. Eighteen health occupations are covered, dietetics being one.

There are 14,393 experienced dietitians in these two health service industries, 13,103 of whom were in hospitals. Only 1,230 dietitians were employed in the "health service industry excluding hospitals," of whom 1,130 were women. Of the total, only 303 were reported as unemployed, 137 were self-employed, and 13,953 were salaried. A breakdown by sex indicated that 640 men were employed as dietitians as compared to 13,450 women.

Since more than 90 per cent of this labor force of dietitians work in hospitals, the figures on hospital employment are interesting. Of these, 12,822 were employed on a salaried basis, only 38 being self-employed. There were 540 men dietitians working in hospitals, all of whom were on a salaried basis in 1950.

Other tables show that of the total of 22,826 dietitians reported by the Census, 8,443 work in industries other than these two "health service industries." There were 15 dietitians per 100,000 persons in the total U.S. population at that time, and 85.9 per cent of these dietitians were employed in urban communities. Forty-two per cent were under thirty-five years of age, and only 3.5 per cent above sixty-five.

Other statistics concern marital status, race, class of worker, and hours. Slightly more dietitians were single than married, but as the age increased a larger percentage were reported to be in "double harness." Only 816 of those under twenty-five were married, but in the 35 to 44 year and 45-and-over groups, far greater numbers were married than were single. Of 21,059 dietitians counted in the figures, 19,261 were white; 1,733 were Negro; and there were 65 of other races. Private wage and salary employment is the situation of 13,501, while 7,405 were government-employed. About half worked from 40 to 44 hr. a week, although a little more than one-fourth worked from 45 to 59 hr.

Geographical distribution showed that only 2,589 of the total of 22,826 dietitians were located in the West. The greatest number, 7,553, lived in the Northeast, although about equal numbers, 6,054 and 6,630, respectively, lived in the North Central states and the South.

Copies of this report, Public Health Service Publication Number 263, are available from the Government Printing Office, Washington 25, D.C., for $1 each.

Career Program. Called "Operation Health Career Horizons," the National Health Council has announced a vocational guidance program to acquaint the nation's high school students with the many careers in health now open to them. The project will be sponsored by the Council with support from The Equitable Life Assurance Society of the United States, one of the Council's sustaining members. The target of the project is to close the gap between what the health professions know and what they are staffed to do to save lives and make them more worth living.

"Operation Health Career Horizons" is a direct outgrowth of the Council's 1954 National Health Forum held in March (see the JOURNAL for June, 1954, page 602), at which leaders in education and representatives of forty-eight national health organizations recommended this kind of across-the-board action to recruit more workers for the health careers.

In line with the recommendations, the Health Horizons project will produce and distribute three publications: a concise guidebook for teachers and vocational counselors, a brief leaflet for the teenagers themselves and for their parents, and a series of health career posters for school and community use. All of the publications will be sponsored, approved, and issued by the Council, while The Equitable will assume responsibility for the production and distribution of these materials.

Howard Ennes, Director, Bureau of Public Health of the Equitable Society will head the Project for both the National Health Council and Equitable. He will be assisted by Zilpha C. Franklin of the National Health Council. Guidance will be provided by three groups: a Project Committee representing the National Health Council, an advisory committee representing the National Association of Secondary School Principles, and a similar group appointed by the National Vocational Guidance Association.

Valuable Reference Data. *Standard Values in Nutrition and Metabolism* is the title of a compendium just issued as the second part of a "Handbook of Biological Data," which undoubtedly will become the authoritative source of data for many figures pertaining to nutrition and metabolism. Prepared under the direction of the Committee on the Handbook of Biological Data of the American Institute of Biological Sciences working under the National Research Council, this paper-bound report has been issued by the Wright Air

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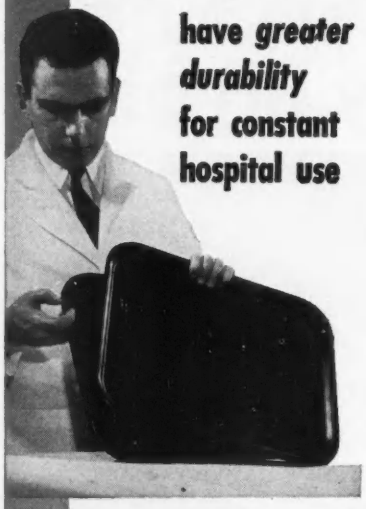
have *greater durability* for constant hospital use



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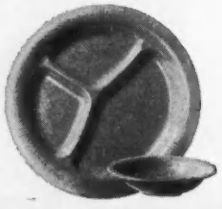

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Development Center, Wright-Patterson Air Force Base, Ohio, as WADC Technical Report 52-301.

The volume presents tabular data, charts, and graphs in the general field of nutrition and metabolism. Both plant and animal forms are included. Explanatory headnotes and footnotes of the tables have been planned to make the subject-matter understandable to the non-specialist. Values presented for variables are means (or adjusted means) of a group of measured values. Where figures were obtainable, each such mean value is followed by an estimate of the lower and upper limits of the 95 per cent range. The quantitative data are supplemented with essential information on nomenclature, methods, and other conditions of measurement. An extensive bibliography is presented as authority for each table. The thirteen sections of the book deal with the following general topics:

1. The nutrients.
2. Nutrients utilized by animal forms.
3. Nutrients utilized by plant forms.
4. Daily nutrient allowances (animal forms).
5. Diets, culture, media, for animal forms.
6. Culture media, fertilizers, for plant forms.
7. Nutrient and energy values of food-stuffs and feedstuffs.
8. Nutrient functions and signs of deficiency and excess.
9. Pathways of metabolism.
10. End products of metabolism.
11. O_2 consumption, CO_2 production: animal tissues, organisms.
12. O_2 consumption, CO_2 production: plant tissues, organisms.
13. Energy exchange.

Although the preliminary, paper-bound report was printed in limited quantity and is not available for general distribution, a hand-bound commercial edition will be published by W. B. Saunders, Philadelphia, this fall. The price is expected to be about $5, and advanced orders may be placed now.

Plentiful Foods MONTHLY LIST

The U.S.D.A. will feature beef and cheese during October as foods in especially plentiful supply. The complete list follows:

Protein foods

Beef	Haddock
Cheese	Milk and other dairy products
Chickens — broilers fryers, and hens	Shrimp
Eggs	Turkeys

Other foods

Rice
Salad oils
Vegetable shortening

Dr. MacEachern Day. Dr. Malcolm T. MacEachern, distinguished leader in hospital administration, was honored by *Hospital Management* magazine on August 16, when that magazine proclaimed "Dr. Malcolm T. MacEachern Day." The many persons in the field who could not be present to honor him at a tea given at Abbott Hall, Northwestern University, sent greetings by mail. During his career Dr. MacEachern has held many important posts of leadership in the field, including: President of the American and International Hospital Associations; President of the Chicago Medical Society; Chairman of the Tri-State Hospital Assembly; Associate Director and Director of Hospital Activities, American College of Surgeons; Director of Hospital Administration, Northwestern University; and many others.

Diabetes Association President. At its meeting in August, the American Diabetes Association elected Dr. Henry B. Mulholland of Charlottesville, Virginia, to be President for the coming year. Dr. Mulholland has been a member of the Association's Board of Directors since 1947, Vice-Pesident for the last two years, and was one of the founders of the Virginia Diabetes Association. He is Assistant Dean and Professor of Internal Medicine, University of Virginia Medical School.

Interns Graduate. On August 26, a dinner was held to honor ten dietetic interns completing their year's work at Stanford University Hospitals, San Francisco. Diplomas were presented by W. P. Geigenmuller, Superintendent, and A.D.A. pins by Helen H. Anderson, Director of Dietetics. The graduating interns are: Gloria Andersen and Helen Gross Dierkes, both of the University of California, Berkeley; Dorris Barron, Tennessee Agricultural and Industrial State College; Mary Jan Bentley and Patricia Crocov, both from the University of California, Los Angeles; Carolyn Edwards Clive, Brigham Young Univerity; Faith Larson, Simmons College; Ruth Lyman Magulac, Oregon State College; Alice Martell, Immaculate Heart College, Hollywood; and Dona Tibbits, University of Minnesota.

World's Eating Habits Change. A trend in many countries toward better balanced diets—richer in meat, eggs, and milk products, and lighter in starchy foods, such as cereals and potatoes—is reported by the Food and Agriculture Organization of the United Nations in its annual report, "State of Food and Agriculture, 1954." These changes are attributed partly to government-encouraged nutrition education programs, as well as expanding agricultural output, improved economic conditions, and, to some extent, a return to prewar eating habits which had been forcibly changed by wartime shortages. Some desirable alterations in prewar eating habits have occurred, however. There is an impressive increase since prewar days in the consumption of fluid whole milk and significant changes in the consumption of staple cereals. In many of the traditionally rice-consuming countries, the consumption of wheat has increased considerably. In the U.S., the consump-

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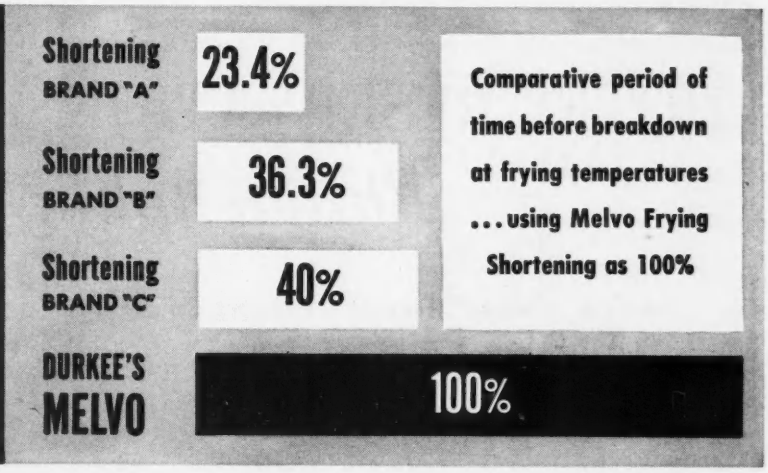

New MELVO, the shortening made exclusively for frying gives you these advantages over ordinary shortening and oils:

1. Lasts longer—withstands high temperatures longer without breaking down.
2. Minimum absorption into foods being fried.
3. Takes higher temperatures without smoking, reducing discoloration of foods.
4. Better keeping quality, avoiding rancidity of fried foods.
5. Produces lighter, tastier, more digestible fried foods.

...and for an all-purpose pure vegetable shortening,

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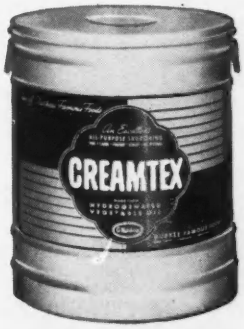
Creamtex is fully hydrogenated. It is specially processed to protect against off flavors and early rancidity. Creamtex is pre-textured, which is why you get excellent creaming qualities. For best all-around shortening results—use Durkee's CREAMTEX.



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tion of eggs, green vegetables, citrus fruit, and tomatoes has steadily increased since 1909, while the use of grain products, potatoes, and sweet potatoes, important mainly as sources of calories, has been reduced.

FAO Conference in Latin America. The Food and Agriculture Organization recently published its *Report of the Third Conference on Nutrition Problems in Latin America*, which was held jointly with the World Health Organization in October, 1953 in Caracas, Venezuela. Reports of progress made since the last conference in 1950 indicated that dietary surveys have been made in a number of countries and their results applied in practical nutrition work. Research on food composition has proceeded actively in many countries, and several comprehensive food composition tables have been prepared. School feeding programs have been developed and further extension of this work is expected. Increasing attention is also being given to industrial feeding in certain countries.

The Conference gave special attention to two subjects, protein malnutrition and endemic goiter, study of which was assigned respectively to two Commissions. Protein deficiency states to which the name *Síndrome pluricarencial infantil* has been given are common in many countries of the region. Depending on the language of the country, this term can be used synonymously with "kwashiorkor." The condition occurs mainly in children, during and after the weaning period. Attention was given to etiology as well as to methods of treatment, which should include emphasis on improvement of the nutrition of mothers and children through supplementary feeding, education, and increased supplies of foods rich in protein which are suitable for child feeding.

The section on goiter is also one of the important sections of the *Report*. Goiter is prevalent throughout much of Latin America, but it can be prevented if practical steps are taken to apply existing knowledge. The instability of potassium iodide, (which has been used in many countries for twenty years for iodization of salt), makes its use impractical in many Latin American countries, because of existing climatic conditions; however, potassium iodate, which is more stable, appears to be a suitable substitute. The Conference described in detail the technical and legislative measures needed and urged that governments take prompt action.

Fish Flour. Large-scale tests of the acceptability of flavorless fish flour as a protein supplement in child feeding will be conducted in four Latin American countries, Chile, Ecuador, Mexico, and Peru, according to an announcement by UNICEF, the United Nations Children's Fund. More than four hundred persons in each country will be involved in the tests. At present little fish flour is produced commercially for human consumption, but if the tests show that it is acceptable as a food supplement in these countries, the UNICEF administration may recommend an allocation of funds to establish a fish flour production plant in Latin America. In most countries, there is a preference for flavorless fish flour which can be included in dishes or food without altering their flavor. However, in some regions, chiefly in Africa and Southeast Asia, fish flour with a flavor known and liked may be preferable.

Army Personnel Announcements. The following personnel assignments and changes have been reported by the Women's Medical Specialist Corps of the Army.

APPOINTMENTS TO ARMY RESERVE AND ASSIGNMENT TO ACTIVE DUTY

Capt. Arlene K. Hugelmeyer
1st Lt. Daisy C. Collum
2nd Lt. Mary H. Coles

RESERVE OFFICERS ASSIGNED TO ACTIVE DUTY

1st Lt. Janet Phinney Rogers
1st Lt. Viola Mae Lentz

TEMPORARY PROMOTIONS

1st Lieutenant to Captain
Grace E. Carpenter
Charlotte H. Henry
Selna A. Kaplan
Margaret H. Kolze
Beulah C. Lumpkin
Lillian Michelson
Georgiana Pearson
Caroline E. Van Mason
Eileen P. Witte

2nd Lieutenant to 1st Lieutenant
Patricia L. Accountius
Frances J. Anthony

HOTEL RESERVATIONS
Philadelphia

▶*37th Annual Meeting—October 26–29*

Please make your hotel reservations for the 37th Annual Meeting of The American Dietetic Association through: THE CONVENTION & VISITORS BUREAU, 17th & Sansom Sts., Philadelphia 3, Pennsylvania. The Bureau will accept either the form given below, or a letter containing equally specific information. You will receive confirmation of your reservation.

The Philadelphia Commercial Museum, where daytime meetings and exhibits will be held, is approximately two miles from the hotel area. The hotels listed below are located within a few blocks of The Benjamin Franklin Hotel, the headquarters hotel.

Order of Choice		Single	Double	Twin Beds
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_____	John Bartram	6.00	9.00	12.00
_____	Benjamin Franklin	6.00–9.00	9.00–12.00	13.00–15.00
_____	Sylvania	7.50	—	10.50–12.50

☐ With single bed (very scarce; arrange for double occupancy, if possible)

☐ With double bed (for two persons)

☐ With twin beds

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(Name of person who will share your accommodations)

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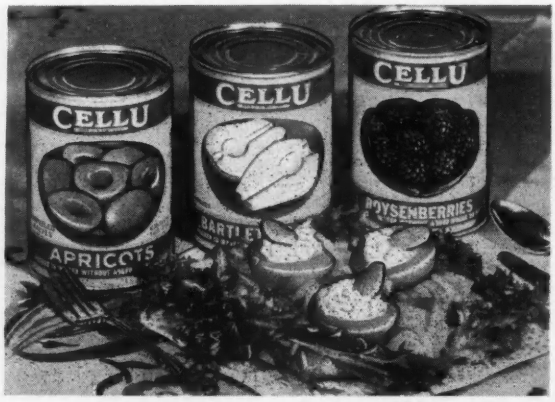

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DIETETIC SCALE

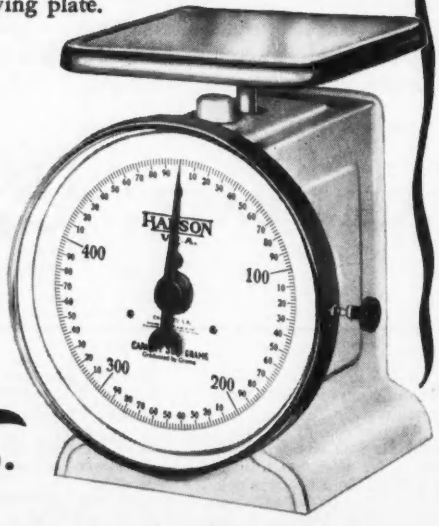
The standard diet scale of the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate.

Capacity 500 grams by grams. Stainless steel platform, white enamel body, easy to keep clean.

Model 1411 (illustrated) has glass protected dial, price $15.00

Model 1440 enamel dial, price $10.00

See your Supply House



HANSON SCALE CO.
Est. 1888
Northbrook, Illinois

Barbara A. Bargen
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Dolores L. Cooley
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Mary M. Diggs
Mary Louise Fisk
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Luz E. Gutierrez
Emma J. Hann
Carolyn S. Henderson
Elizabeth Holenweg
Marytha L. Howe
Marilyn L. Kuebler
Sarah A. Martin
Patricia E. Mooney
Joann M. Morletti
Dora A. Powell
Ruthie M. Randolph
Patricia L. Sayre
Jewelene Traylor

Reserve Officers Relieved from Active Duty

Capt. Janet A. Hamill
Capt. Lillian Michelson
1st Lt. Mary Owen Bass
1st Lt. Jane R. Bowers
1st Lt. Josephine K. Hemmer
1st Lt. Elizabeth Marshall
1st Lt. Genevieve A. Mastaler
1st Lt. Marjorie A. Rowley
1st Lt. Harriet L. Schupp
1st Lt. Ruth M. Vorwerck
1st Lt. Betty K. Zaice

Regular Army Retirements

Major Lydia Romersa Ylinen
Major Myrtle Aldrich

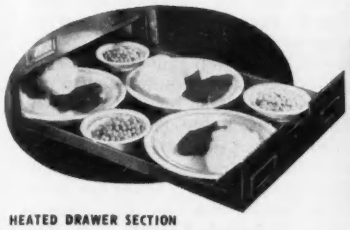
Regular Army Officers Honorably Discharged

Capt. Beatrice Goldberger
Capt. Eleanor R. Irwin
Capt. Helen R. Preston
Capt. Ethel L. Squires

U.S.D.A. Award to Dr. Batchelder. One of three Awards for Distinguished Service by the Agricultural Research Service of the U.S.D.A. this year went to Dr. Esther L. Batchelder of the Human Nutrition Research Branch. Her award was given for "leadership in developing research in food and nutrition and in applying research results to improved national and international utilization of food."

Brooklyn Course for Food Service Supervisors. Brooklyn College has announced that it will begin a two-year, diploma course in "Food Service Administration" beginning this fall. The course has been planned to train persons for careers as food service supervisors, kitchen managers, pantry supervisors, and food service assistants. The curriculum will include courses in quantity food preparation, catering, sanitation, equipment maintenance, time- and labor-saving skills, menu planning, and food management. Further information may be obtained from the Division of Vocational Studies, Brooklyn College, Brooklyn 10, New York.

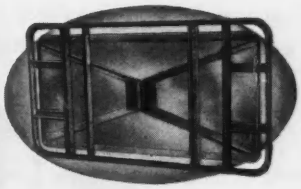
Government Publication. A recently processed compilation by the Human Nutrition Research Branch, U.S.D.A., is "A Selected List of Nutrition and School Lunch Materials." This bibliography was prepared by the government's Interagency Committee on Nutrition, Education, and School Lunch,



HEATED DRAWER SECTION

Large heated drawers, ventilated for even distribution of heat, carry up to three 9" food plates with side dishes. Heated section fully insulated with Fiberglas.

IDEAL MEALMOBILES to help solve your food serving problems

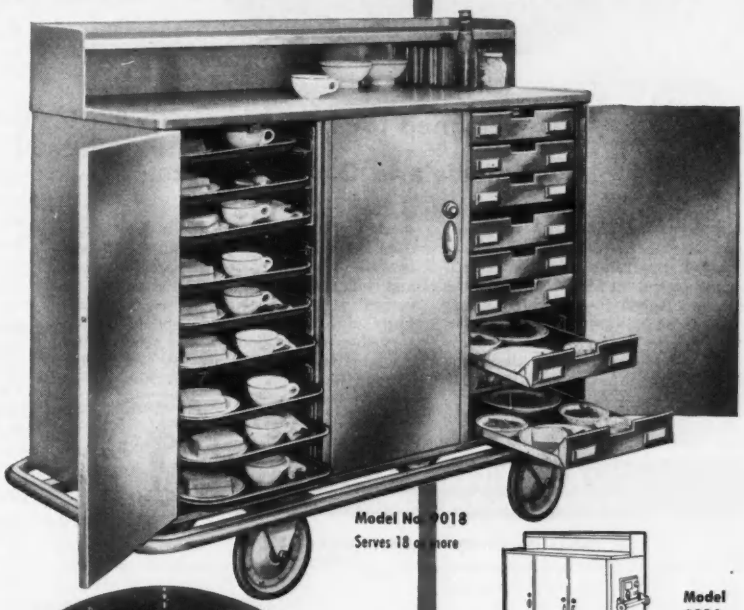


X-MEMBER CONSTRUCTION

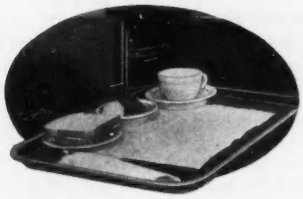
Completely prevents racking. This sturdy additional structural strength of X-Member construction is provided only by Swartzbaugh.

DOLE HOLDOVER PLATES

To preserve frozen desserts and other foods Dole Plates are provided, and these plates fit on the regular tray supports. They also serve to cool the compartment below them.



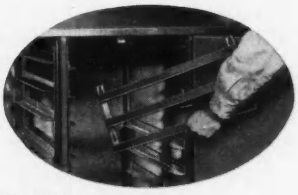
Model No. 9018
Serves 18 or more



COLD COMPARTMENT

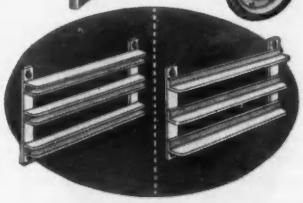
Holds from 9 to 12 trays depending on the model of the unit. Accommodates trays of all sizes up to 15¼"x20½".

Model 9024
Serves 24 or more



REMOVABLE TRAY GUIDES

Adjustable tray guides can be easily removed leaving the entire interior completely accessible for thorough cleaning with steam or detergent.



TRAY AND SHELF GUIDES

Tray guides are supplied in 2 designs for pull-type drawers and trays, and for refrigerator-type shelves. Either type may be selected.

Model 9518
Serves 18 or more

AUTOMATIC TEMPERATURE CONTROL

Robertshaw Automatic Thermostat assures foods at original hot serving temperatures.

CASTERS

Eight-inch ball bearing rubber tired wheels are scientifically engineered for perfect balance and easy mobility.

REPLACEABLE BUMPER GUARD

Tough aluminum bumper assembly fully protects body of conveyor. Clincher type rubber bumper guard easily replaced, in whole or part.

Model 9524
Serves 24 or more

IDEAL Mealmobiles, made only by Swartzbaugh, enable you to extend "kitchen control" to your patient's bedside. You can now easily serve kitchen-fresh, appetizing meals — with hot foods hot and cold foods cold — anytime, anywhere. New IDEAL Mealmobiles are available in four models, and are designed to deliver plates and trays of hot foods and cold dishes for 18 to 32 meals. Free catalog.

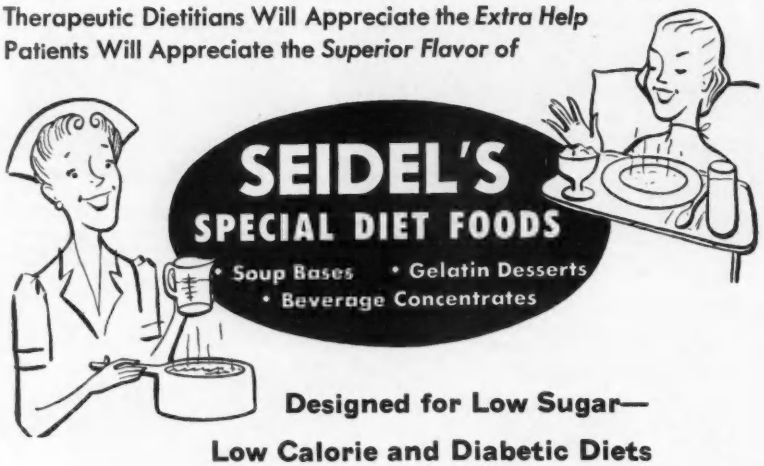
● *Make it a point to visit our exhibit at the American Dietetic Show, Booth 215.*

Ideal HOSPITAL EQUIPMENT
Found in Foremost Hospitals

HIA Hospital-Industries Association

Made only by the
SWARTZBAUGH MANUFACTURING COMPANY
MURFREESBORO, TENN.

Therapeutic Dietitians Will Appreciate the *Extra Help*
Patients Will Appreciate the *Superior Flavor of*



Designed for Low Sugar—
Low Calorie and Diabetic Diets

Developed in consultation with dietitians from many leading hospitals and chemists from Abbott Laboratories—Seidel's Special Diet Foods contain Sucaryl Calcium*, the new sweetening agent that is thirty times sweeter than sugar and *does not have any disagreeable after taste.* Taste panel tests show marked preference by patients for these new special foods over anything presently on the market. Moreover, heating in any degree does not injure their palatability. All products are very simple to prepare for serving and will save much effort. Packed in convenient jars and bottles for use as needed. Copy of Analysis by Independent Laboratory showing low Sodium and other content available on request. Price list and samples on request.

* *Abbott Cyclamate*

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1245 WEST DICKENS AVENUE, CHICAGO 14
FOOD SERVICE

Quality Food Products since 1890

for Tasty, Juicy hamburgers*

make 'em the Automatic way!

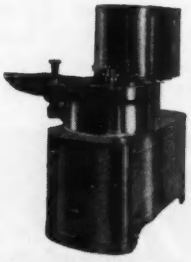
There's a better way to prepare hamburgers, fish cakes, etc., quickly and conveniently and economically and that's the Automatic Food Shaper way.

Here's why! Only the Automatic Food Shaper handles the food mixture gently and never bruises, crushes or mashes the food. This results in really superior tasting, fluffier, juicier food patties. And, best of all, expensive, unsanitary hand shaping is completely eliminated.

Remember, too, Automatic Food Shapers maintain rigid cost control with uniform portions. When desired, the portion size can be adjusted by merely turning a knob!

Write for literature that describes our three electrically driven models available with capacities of hundreds or even thousands of patties an hour—all with one operator!

* or fish cakes, hash patties, veal or lamb patties, crab cakes or any other food mixture that can be served or portioned in patty form!



Model DA—Capacity: 2400 patties per hour

AUTOMATIC FOOD SHAPING CO., INC.
58 New Street New York, New York

and lists only non-technical materials published by the various agencies. Listings are divided into five general categories: nutrition, consumer educational and buying guides, food, nutrition education, and school lunch. Sub-classifications in each category allow the material to be presented in a well organized manner. Approximately 160 publications are listed. Copies are available on application to the Human Nutrition Research Branch, U.S. Department of Agriculture, Washington 25.

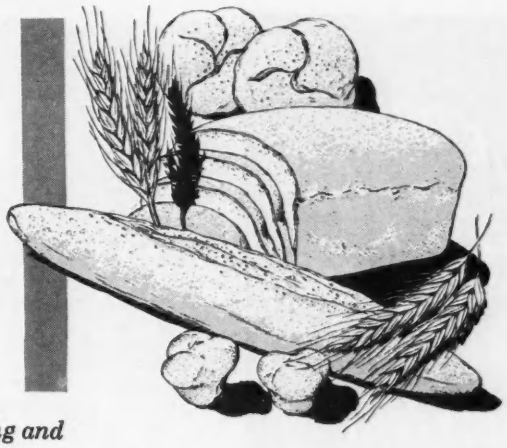
Health Film Catalog. A fifty-page *Health Film Catalog*, just released by the Health Education Committee of the Cleveland Health Council, lists 540 films available from 24 agencies and organizations in the greater Cleveland area. The catalog includes general information on film sources, and the films are listed alphabetically according to title, according to sources, and by subject classification. Pertinent data as to length, agency, color, professional use, and a brief description are included in each listing. Films vary from those produced for teaching in the elementary grades to those geared to professional use only. Supplements to bring the catalog up to date will be issued from time to time. Copies may be obtained from the Bureau of Health Education, Division of Health, City Hall, Cleveland, Ohio.

Alaskan Food Handlers Receive Training. In August, the Mt. Edgecumbe (Alaska) Hospital conducted a three-day food institute for food handlers employed by the hospital and by school- and employee-eating clubs. Lectures and demonstrations on food sanitation and handling were conducted by Lloyd Coe, Director, Health Education Division, and Reynolds A. Young, Sanitarian, of the Territory's Health Divison. Films, charts, and leaflets were used as teaching aids in acquainting the forty-nine participants with their responsibility for cleanliness in preparing and handling food and the proper methods of dishwashing.

[Temperature and Tomato Red. Tomato color, or the redness of tomatoes, is important to both the consumer and the grower. For U.S. No. 1 grade, tomatoes must have good red color over 90 per cent of the surface or more. Good red color over two-thirds to 90 per cent of the surface puts the tomatoes in No. 2 grade, and if less than this, the tomatoes are classed as culls. Tomatoes may be ripe, yet orange or yellow in color and classed as culls, because the red color is so important in determining quality for processing. The New York Agricultural Experiment Station reports that, contrary to popular belief, tomatoes do not develop good red color in extremely hot weather, especially if they are exposed to the sun. In explaining how hot weather affects the color, the Station says there are three color pigments in tomatoes—chlorophyll or green, carotene or yellow, and lycopene or red. Green dominates until tomatoes reach a certain stage of maturity, and if the temperature remains below 50° F., the chlorophyll won't

advertisement

FLOUR FOR MAN'S BREAD*



A Brief History of Milling and Baking by SCIENCE WRITER

CHAPTER III. *How Wheat Cultivation Migrated*

STARTED FROM ONE STRAIN

It is probable that all of today's varieties began with a single strain of wild grain. Very likely this was wild einkorn.

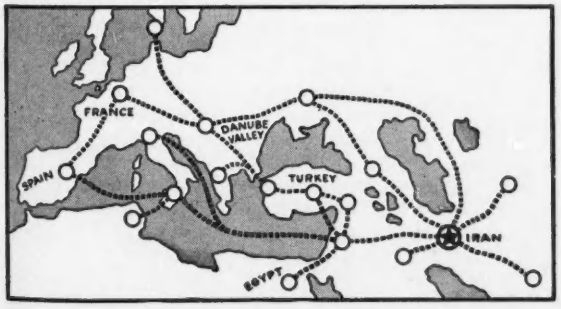
We know that this wheat was cultivated in Mesopotamia and central Asia Minor thousands of years ago. It was not a very satisfactory wheat, having a somewhat bitter taste and dark grains.

Another wheat, emmer, was widely cultivated in early agricultural days. Even today, it is found growing wild in Syria and Palestine and other places along the southern edge of the einkorn area. It must have been a popular grain because it has been discovered in early Egyptian settings and we know that it was grown in Europe's Danube Valley.

BREAD WHEATS DEVELOPED

The development of the bread wheats, caused either by matings with wild grasses or by an accidental doubling of the parent wheat's chromosomes, had an enormous influence on the spread of wheat-growing and milling. Most of these bread wheats have naked kernels and therefore are easier to mill. They have a better taste, too.

Fanning out from Iran where they probably originated, the bread wheats spread across Europe and Asia and into the Nile Valley in Africa. Einkorn and Emmer had been introduced earlier into these places, and the bread wheats followed them. The migration of the naked kernel wheats began about 2100 B.C.



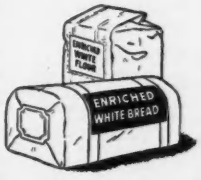
GRAIN EMPIRES FORMED

Great grain empires grew up in Egypt along the Nile and in Mesopotamia beside the Tigris and Euphrates. These rivers were used to irrigate the grain fields which were thus made extraordinarily productive. So important was wheat-culture to these areas that even religious beliefs were bound up with the production of grain.

GRAINS GO ACROSS THE WORLD

During the Europeans' great period of colonizing beginning in the 1700's, wheat was carried to new lands in the temperate zones around the globe. It is interesting to note that today wheat-growing has been adapted to quite different climatic conditions from those under which it originally developed in Near Eastern countries.

VITAMINS AND WHITE FLOUR, WHITE BREAD



In the United States and Canada, as well as in other countries throughout the world, the enrichment of white flour and white bread is an accomplished fact. Enrichment is really a simple process. In milling wheat to achieve the white flour which consumers demand, vitamins and minerals are unavoidably lost. Enrichment restores the following important nutrient factors: thiamine, riboflavin, niacin, and iron. Some processors add calcium, too. Enrichment thus provides better nutrition.

This is one of a series of articles which is being published in professional nutrition and dietetic journals, and which will be widely distributed for educational purposes. Reprints of this and all other chapters are available without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

*This is the title of a definitive history of milling by John Storck and Walter Dorwin Teague, published by the University of Minnesota Press at Minneapolis and copyrighted by the University of Minnesota. It is used with permission as a source of material for this series of advertisements.

The next chapter titled: "The Business of Milling Begins" will be published in the near future.

Enriched with vitamins and iron for better nutrition

advertisement

Have you any HOT FOODS to move today!

PORTABLE
AERVOID
REG U S PAT OFF
Vacuum Insulated
HOT FOOD, SOUP and COFFEE CARRIERS
BEGIN WHERE COOKING KETTLES AND COFFEE URNS LEAVE OFF

INSTITUTIONS - HOSPITALS

When you have hot foods, hot soup, hot coffee to be serviced a distance from your kitchens . . . THAT'S WHERE PORTABLE AerVoiD VACUUM INSULATED HOT FOOD AND LIQUID CARRIERS COME IN.

AerVoiDs begin where cooking kettles and coffee urns, leave off. They provide a means by which the output of stationary cooking equipment can readily be transported and serviced at points distant from your kitchens . . . expediting service, sav'ng time, money, labor.

AerVoiDs cost but a fraction of the cost of urns, steam tables, cooking kettles. Made of stainless steel, sanitary, high vacuum insulation (exclusive with AerVoiDs) that insures thermal efficiency to keep foods hot for servicing even miles from a central kitchen and with high retention of all the essential food elements and flavors as demonstrated by laboratory tests.

Not being anchored to one location, portable AerVoiDs open up immense new possibilities in expediting mass feeding. The only "complete line" of portable hot food servicing equipment on the market . . . sizes and types to feed thousands or just a few.

Experienced mass feeding consultants to help you without cost.

Write for illustrated price list JD-54 Compare. See how much less portable AerVoiDs cost . . . how much you can save.

VACUUM CAN COMPANY
19 SOUTH HOYNE AVENUE
CHICAGO 12, ILLINOIS

change At temperatures from 50° to 80°, if the tomatoes are mature, chlorophyll breaks down and lycopene and carotene both develop. In tests at the Station, tomatoes attained highest quality color if ripened at 80° by day and 65° at night. They required nine days from the "turning" stage to reach red-ripe maturity.

Margaret Schorey D'Anton. Word has just now been received in the A.D.A. office of the death in June, 1953 of Margaret Schorey D'Anton. She had been a member of the Association for nine years, and prior to her marriage had been on the staff at the Waverly Hills Sanatorium, Waverly Hills, Kentucky. At the time of her death, she was making her home in Houston.

News of State Associations

New Jersey Dietetic Association. The following new officers for 1954–55 have been elected by the New Jersey Dietetic Association: President-Elect, Dorothy Eckert, New Brunswick; and Secretary, Patricia Heemstra, Metuchen.

Vermont Dietetic Association. Officers for 1954 elected by the Vermont Dietetic Association are: President, F. Aline Gravel, Head Dietitian, Mary Fletcher Hospital, Burlington; President-Elect, Helen Brown, Waterman Building Cafeteria, Burlington; and Secretary, Dorothy L. Stead, Dietitian, Mary Fletcher Hospital, Burlington.

Virginia Dietetic Association. On April 24 and 25, the Virginia Dietetic Association held its silver anniversary spring meeting at Old Point Comfort. The event was highlighted by the presence of one charter member, Bertha Ide, Head, Nutrition Clinic, Norfolk General Hospital. The banquet speaker of the event, Dr. H. St. George Tucker of the Medical College of Virginia, spoke on "Endocrine Functions and Nutrition Interrelationships," while the luncheon speaker, Anna dePlanter Bowes, who represented A.D.A., brought the group up to date with her talk, "A.D.A. Affairs." Other speakers were Kathryn Heitschu, Past-President of the Virginia Association, who reviewed the history of the organization; Janis Viser, Personnel Coordinator of the Medical College of Virginia, whose topic was "Developing a Sense of Responsibility among Employees"; and Edwin C. Mattick, Armour & Co., who discussed "Buying Meat Wisely."

The Association has announced that Sandra Spahr, a senior at Virginia Polytechnic Institute, is the recipient of the $200 Margaret McDonald Memorial Dietetic Scholarship. This is the second year that the award, which is to be given annually to a Virginia college senior entering a dietetic internship, has been offered.

At the request of the Virginia Academy of General Practice, the Virginia Dietetic Association had an exhibit and a delegate at the fourth Annual Scientific Assembly held May 5 to 7. Erna Mae Behrend represented the Association at the business meeting where talks were given by representatives of the other professional groups, including nursing, dentistry, and pharmacology.

As a work project last year, the Diet Therapy Section of the Virginia group developed a simple leaflet called "Food Guide for Middle Age and After." This leaflet deals with the problems of food for the elderly, with emphasis placed on only enough calories required for the amount of work the body does. Adequate amounts of protein, vitamins, and minerals are stressed, of course. Sample menus are included. The Association hopes that these leaflets will be placed in the homes for elderly people, and that later, from the experience of those who work with the aged, a helpful, more comprehensive booklet may be produced.

The Professional Education Section of the Virginia Association selected "Professional Assistance to Foreign Countries" as its project and picked the Philippines as the country they wished to help. Through the sales of UNESCO Gift Stamps at the Association meetings, the Section contributed $102, which is now being used to buy laboratory equipment and chemical supplies at the Institute of Nutrition in Manila.

The *Roanoke Dietetic Association* sponsored an essay contest for Career Week. High school students were eligible to enter, and the Association arranged a tour of local hospitals so that students might observe dietitians on duty and thus gain background material for their essays. Of the applicants, a Jefferson High School student, Jane Fleenor, won with her paper titled "Dietitians at Work." The award, a $25 Savings Bond, was presented at a tea for the contestants.

The *Roanoke Dietetic Association* officers for 1954–55 will be: President, Helen Goodykoontz, VA Hospital; Vice-President, Marian Williamson, Director, Home Economics Education, Roanoke City Schools; and Secretary-Treasurer, Catherine McCown, Roanoke Memorial and Crippled Children's Hospital.

The new officers for 1954–55 for the *Richmond Dietetic Association* are: President, Mary Kelly, Medical College of Virginia; President-Elect, Edna Cates, Johnston-Willis Memorial Hospital; and Treasurer, Virginia Irons, Richmond Public School Cafeteria Service.

Association Activities

Aids for Hospitals. The *Tentative Outline of Class Room Instruction for the Training of the Food Service Supervisor* and the *Tentative Trial Outline of the Supervised Practice of the Food Service Supervisor* (*Hospital Experience*) are now available. These course-content outlines were developed by the A.D.A. Committee to Study the Food Service Supervisor in an effort to encourage and

greatest industry advance in 20 years!

features, value, and styling that challenge comparison

NEW "FLOW-LINE" SHELF
Streamlined continuous storage surface unbroken by dividers or end brackets. Easy to clean coved back edges on both top and bottom shelves. 25% more usable shelf area!

NEW ONE PIECE FRY TOP
Extra frying capacity for rush hour peaks. Eliminates hot grease seepage under fry top. Drain empties into convenient front grease receptacle.

NEW FLUSH-TO-FLOOR DESIGN
AGA approved for installation without legs on nonfireproof floors. Easier to keep clean. Modern streamlined appearance.

NEW TOP BURNER VALVES
All top burner valves on all ranges are new simmer-set type. Any burner adjusts down to simmer without peeking. New firm-grip valve handles.

NEW ALL PORCELAIN ENAMEL LININGS
Top burner box, oven burner box and oven linings are completely porcelain enameled for a lifetime of service and sanitary quick cleaning.

Get more *Performance Economy Profit*.
Buy now during the nationwide "PEP" commercial Gas Sales Campaign.

See your food service equipment dealer or write
MAGIC CHEF, INC. • ST. LOUIS 10, MO.

Magic Chef
"SUPER DUTY"
GAS COMMERCIAL COOKING EQUIPMENT

NEW
flavor lift for LOW-SODIUM DIETS

Adolph's SALT SUBSTITUTE

Low sodium foods can now have all the tang of salt seasoning. Adolph's, only product containing MONO POTASSIUM GLUTAMATE, flavors—tastes—sprinkles like salt.

MAKES ALL MEAT MORE TENDER

Regardless of cut or grade, Adolph's guarantees tenderness, less shrinkage—cooking time, and improves flavor. Reduce meat budget by changing cooking methods of less expensive cuts.

Adolph's MEAT TENDERIZER

For FREE SAMPLES write: Dept. DA
ADOLPH'S FOOD PRODUCTS, L.A. 46, Calif

AATELL & JONES

Simplify Service Eliminate Errors with AATELL & JONES DIET CARDS

- HOLIDAY ITEMS
- PRINTED NAPKINS
- TRAY COVERS

Trays are easy to identify with these convenient 2¼" x 1¾" Diet Cards. Ten standard diet subjects available, each on a different colored sturdy stock. Space allowed for patient's name, room and special notes. Write for samples and prices.

Aatell & Jones, Inc.

3360 FRANKFORD AVENUE
PHILADELPHIA 34
PENNA.

foster training programs for the food service supervisor. Each outline sells at 25 cents a copy. The Committee encourages you to consider establishing a course as a community project to assist the hospital dietary departments which are understaffed.

The duties and responsibilities of the dietitian, the dietary clerical worker, and the food service supervisor are listed in an editorial, "Duties and Responsibilities," which appeared in the JOURNAL in July, 1954, page 692. Why not check these lists and compare them with the patterns of responsibilities in your own organization? It is important to the profession and to its future that dietitians delegate duties and responsibilities. Reprints of this editorial are available at 10 cents a copy. *Hospitals* published a similar article on the food service operator in its September issue.

Hospital Food Service Manual, a publication sponsored by the Joint Committee of the American Hospital Association and The American Dietetic Association, is written primarily to provide help for the small hospital without a professionally qualified dietitian. It will also be valuable to anyone in food service, and dietitians will find this book a "must" for their libraries. The *Manual* includes chapters on menu planning, food orders, purchasing, storage, preparation, food service, care and cleaning of equipment, personnel, cost accounting, and so on. It will be available in October at $6 a copy.

"Dietary Consultation—A Service for Small Institutions," a series of articles published originally in the JOURNAL and now available in reprint form, continues to deserve your attention. The series was written to help small hospitals without dietitians and to serve as a review for the young homemaker who may be ready to return to hospital dietetics, either on a full- or part-time basis. The Food and Nutrition Board of the National Research Council encouraged the development of these articles.

Shared Dietitian. The Joint Committee of the American Hospital Association and The American Dietetic Association is extremely interested in promoting and encouraging the employment of the shared dietitian as one means of giving assistance to small hospitals. An article by Thelma Pollen, A.D.A. Public Relations Director, directed to the administrator of the small hospital, appeared in the May 1954 issue of *Hospitals*. Another article addressed to dietitians who might be interested in serving a group of small hospitals, was published in the September issue of the JOURNAL.

If you are experienced and are interested in working in two or three hospitals located within reasonable proximity of each other, the A.D.A. Placement Bureau Director would appreciate hearing from you. Be sure to give your location preference, and remember that since the small hospitals are the ones which need this service, they are more apt to be situated in small communities rather than urban areas. We encourage your inquiries about employment as a shared dietitian.

Our ranks are increasing, but so is the demand for our services. The shared dietitian is one answer to a desperate need for dietitians in small hospitals.

Evaluation Scales. If you are the director of a dietary department with the responsibility of filling vacancies on your staff and of encouraging your younger staff members to take advantage of greater opportunities, you will find the "Staff Evaluation Forms" helpful. An editorial in the JOURNAL (April 1954, page 358) offers explanatory material. Copies cost 10 cents each. The *Manual for the Administration of the Evaluation Forms*, which provides guidance for the use of the forms, is priced at 25 cents.

A.D.A. Exhibit. The exhibit which stresses the value of the shared dietitian was shown at the *American Hospital Association* meeting, September 13 through 16, in Chicago. The Chicago Dietetic Association was in charge of the exhibit. Florence Severson served as exhibit chairman.

News of Products and Services

Syracuse China has just introduced a new holloware ensemble which includes individual creamers, handled creamers, small and large sugar bowls, two sizes of tea pots, and an ash tray. Called "Doric," the line is available in five colors: forest green, sage green, pearl gray, adobe, and black—all of which harmonize and complement other Syracuse patterns. The company feels that the teapot is especially worthy of note, for it comes in two sizes, 1- and 1½-c. capacities.

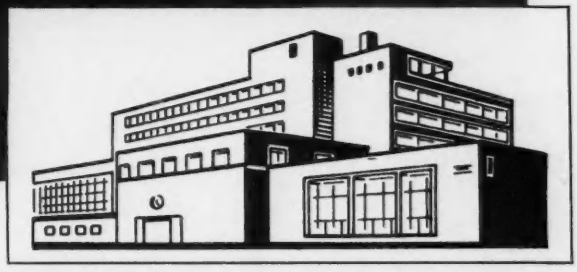
The *Market Forge Company* has developed a new cooking unit which should be of interest to both large and small food service operators. It is an electrically operated combination commercial Steam-It pressure cooker and a 20-gal. kettle. This unit has the advantages of steam pressure cooking and a steam-jacketed kettle. Both the cooker and the kettle are connected directly to the boiler. The steam-jacketed kettle will bring 20 gal. water to a boil in less than 30 min., while the Steam-It pressure unit operates at 15 lb. pressure. This combination unit is said to be inexpensive to operate, as the power is automatically controlled.

The *Metropolitan Wire Goods Corporation* is offering a new rack measuring just half the size of the conventional square dishwashing machine rack. This midget size wire stacking rack was developed to fill a need for a small, light container for transporting, washing, and storing cups and glasses. It is light in weight and easy to handle, fits on back bar or shelving and in other spots where a full rack would be too large. Because of its light weight, the rack can be used to advantage where women are employed.

INDIANA UNIVERSITY MEDICAL CENTER
Student Union and Food Service Building

Eggers and Higgins, *Architects* Edw. D. James, *Architect*

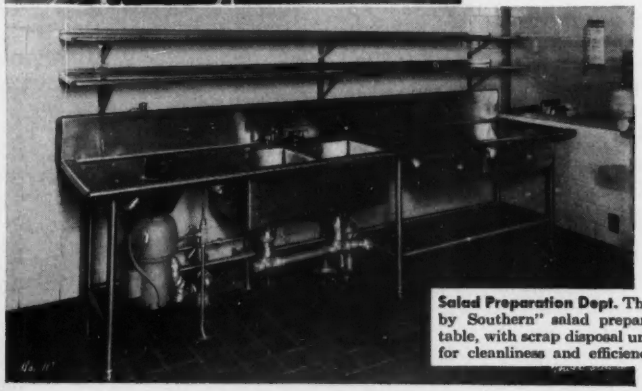
Entire food operation—including this completely equipped banquet kitchen on the mezzanine—accommodates a maximum of 917 persons at one time.



Dishwashing Dept. Mechanically washed and rinsed dishes remain in racks and pass over a forced heated air drier to expedite drying.

SOUTHERN DEALER PLANS and INSTALLS PRIZE-WINNING KITCHEN

Starting with a detailed analysis of the contemplated menu and the purchasing procedure, National China & Equipment Corporation, Marion, Indiana, achieved a precise allocation of space for storage, preparation and service at the Student Union & Food Service Building in Indianapolis. Three separate operations—cafeteria, snack bar and banquet service—are served from a central kitchen. This modern, efficient installation won a First Award in the 1954 Institutions Food Service Contest.



Salad Preparation Dept. This "Custom-Bilt by Southern" salad preparation sink and table, with scrap disposal unit, was designed for cleanliness and efficiency.

Get expert help with your next kitchen equipment problem or layout—call your "Custom-Bilt by Southern" dealer or write Southern Equipment Company, 5017 So. 38th Street, St. Louis 16, Mo.

SOUTHERN
EQUIPMENT COMPANY

COMMERCIAL EXHIBITORS—37th ANNUAL MEETING OF THE AMERICAN DIETETIC ASSOCIATION, PHILADELPHIA—OCTOBER 26–28, 1954

Aatell & Jones, Inc.
Adolph's Ltd.
Aluminum Cooking Utensil Company
Amcoin Corporation
American Can Company
American Dry Milk Institute, Inc.
American Gas Association
American Institute of Baking
American Machine & Foundry Company
American Molasses Company
American Sterilizer Company
Anetsberger Bros., Inc.
Armour & Company
Automatic Food Shaping Co., Inc.
Automatic Orange Juicer Corp.
Beech Nut Packing Co.
Best Foods, Inc.
G. S. Blakeslee & Company
S. Blickman, Inc.
G. S. Blodgett & Company, Inc.
Blessing-Hoffmann Corp.
Boonton Molding Company
Borden Company
Bucksco Sales, Inc.
Buff-Henley Paper Co., Inc.
Calgon, Inc.
Campbell Soup Company
Carnation Company
Cereal Institute, Inc.
Chicago Dietetic Supply House, Inc.
Cleveland Range Company
Cling Peach Advisory Board
Colonial Beef Company
Colt's Manufacturing Company
Commodity Brokers, Inc.
Continental Can Company, Inc.
Cory Corporation
Cramore Fruit Products, Inc.
Cream of Wheat Corporation
Crescent Metal Products, Inc.
Custom Food Products Inc.
Dennis Water Cress, Inc.
Detroit Michigan Stove Company
Diamond Crystal Salt Co.
The Dietene Company
Edward Don & Company
Doughnut Corporation of America
DuBois Company
Duke Manufacturing Company
Economics Laboratory, Inc.
Encyclopaedia Britannica
Evaporated Milk Association
Fearn Foods, Inc.
Florida Citrus Commission
Fogel Refrigerator Co.
Foley-Irish Corporation
Foster Refrigerator Corporation
E. Fougera & Company, Inc.
W. H. Frick, Inc.
Frying Equipment & Supply Co.
General Foods Corporation
General Mills, Inc.
Gerber Products Company
Globe Slicing Machine Co.
Groen Manufacturing Company
Hall China Company
H. J. Heinz Company
Hilker & Bletsch Company
Hobart Manufacturing Company
Hotpoint Co.
B. H. Hubbert & Son, Inc.
Insinger Machine Co.
Institutional Feeding & Housing
Institutions Magazine
International Minerals & Chemical Corp.
International Molded Plastics, Inc.
Jarvis & Jarvis, Inc.
Mead Johnson & Company
Kellogg Company
Klenzade Products, Inc.
Charles B. Knox Gelatine Company
Kraft Foods Company
Legion Utensils Company
Lily-Tulip Cup Corporation
J. B. Lippincott Company
Lofstrand Company
Lyons Alpha Products, Inc.
McCall Refrigerator Corp.
McGraw Electric Company
M & R Laboratories, Inc.
Magic Chef, Inc.
Maid Easy Cleansing Products Corp.
Malleable Steel Range Mfg. Corp.
Maltex Company
Market Forge Company
Mayer China Company
Mealpack Corporation
Meals-On-Wheels
Merck & Company
Metropolitan Wire Goods Corporation
National Biscuit Company
National Cornice Works
National Cranberry Association
National Dairy Council
National Livestock & Meat Board
National Pretzel Bakers Institute
H. R. Nicholson Company
Onondaga Pottery Company
John Oster Mfg. Company
Paper Cup & Container Institute
L. H. Parke Company
Pepperidge Farm, Inc.
Parker D. Perry, Inc.
Pet Milk Corporation
Pfaelzer Brothers, Inc.
Philadelphia Gas Works
Pillsbury Mills, Inc.
Pineapple Growers Association
Plastics Manufacturing Company
Processed Apples Institute, Inc.
Procter & Gamble
Quaker Oats Company
Qualheim, Inc.
Ralston Purina Company
Raybeam Aluminum Cleaner Co.
Raytheon Mfg. Company
Rich Products Corporation
Salvajor Company
W. B. Saunders Company
Savory Equipment, Inc.
SeaPak Corporation
Seco Company, Inc.
Ad Seidel & Son, Inc.
John Sexton & Company
Southern Cross Mfg. Corp.
Felix Spatola & Sons
E. R. Squibb & Sons
Standard Brands, Inc.
Supplee-Wills-Jones Milk Co.
Swartzbaugh Mfg. Company
Tea Council of the U.S.A., Inc.
Emery Thompson Machine & Supply Co.
Toledo Scale Company
United Fresh Fruit & Vegetable Assn.
United Fruit Company
U. S. Vitamin Corporation
Universal Dishwashing Machine Company
Vacuum Can Company
Webster Van Winkle Corporation
Victory Metal Mfg. Corp.
George B. Vrooman, Inc.
Vulcan Hart Mfg. Company
Waring Products Corporation
Watertown Manufacturing Company
Wesson Oil & Snowdrift Sales Co.
Williams & Wilkins Company
Wyandotte Chemicals Corporation